

# THE SINCLAIR/TIMEX USERS MAGAZINE

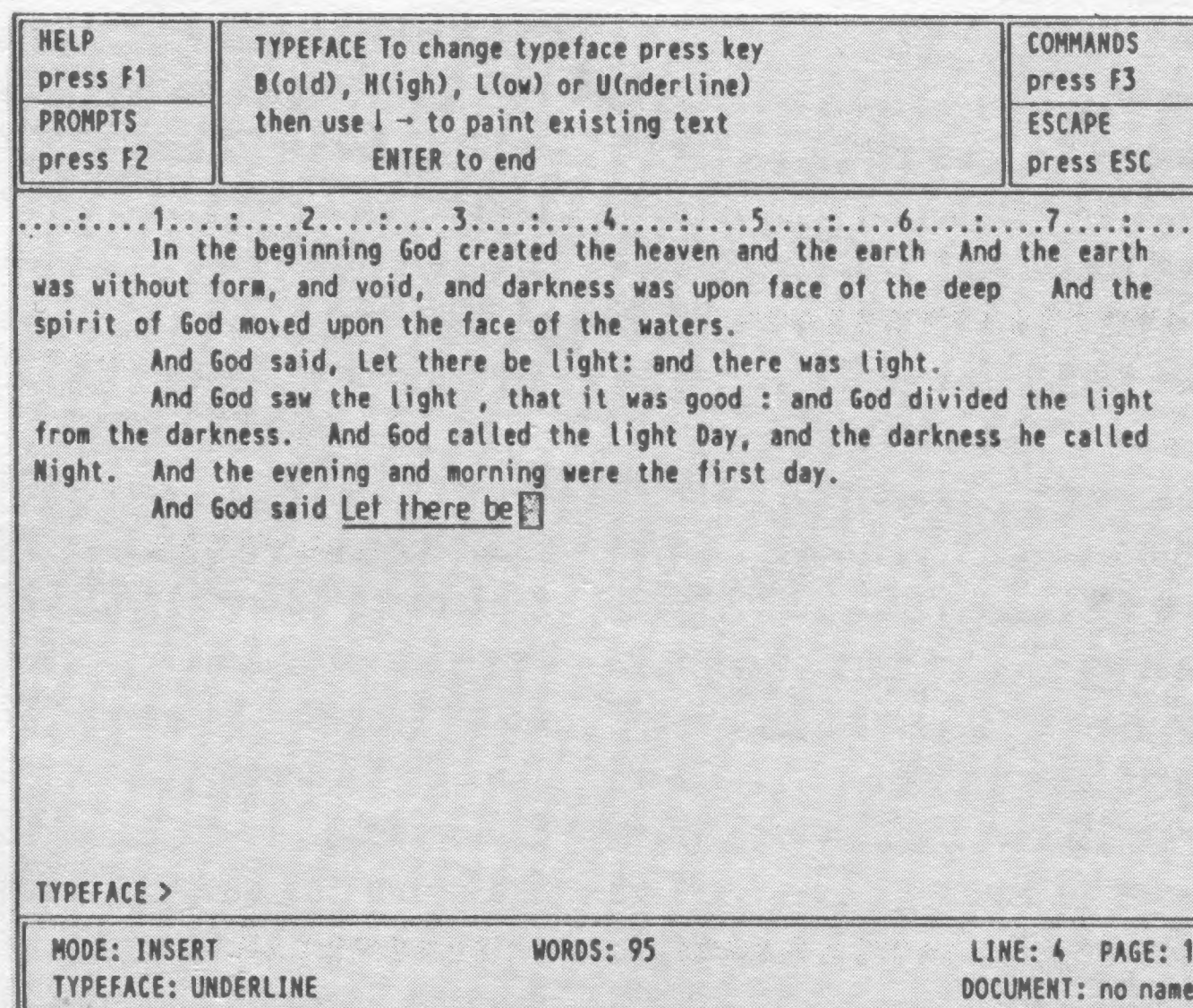
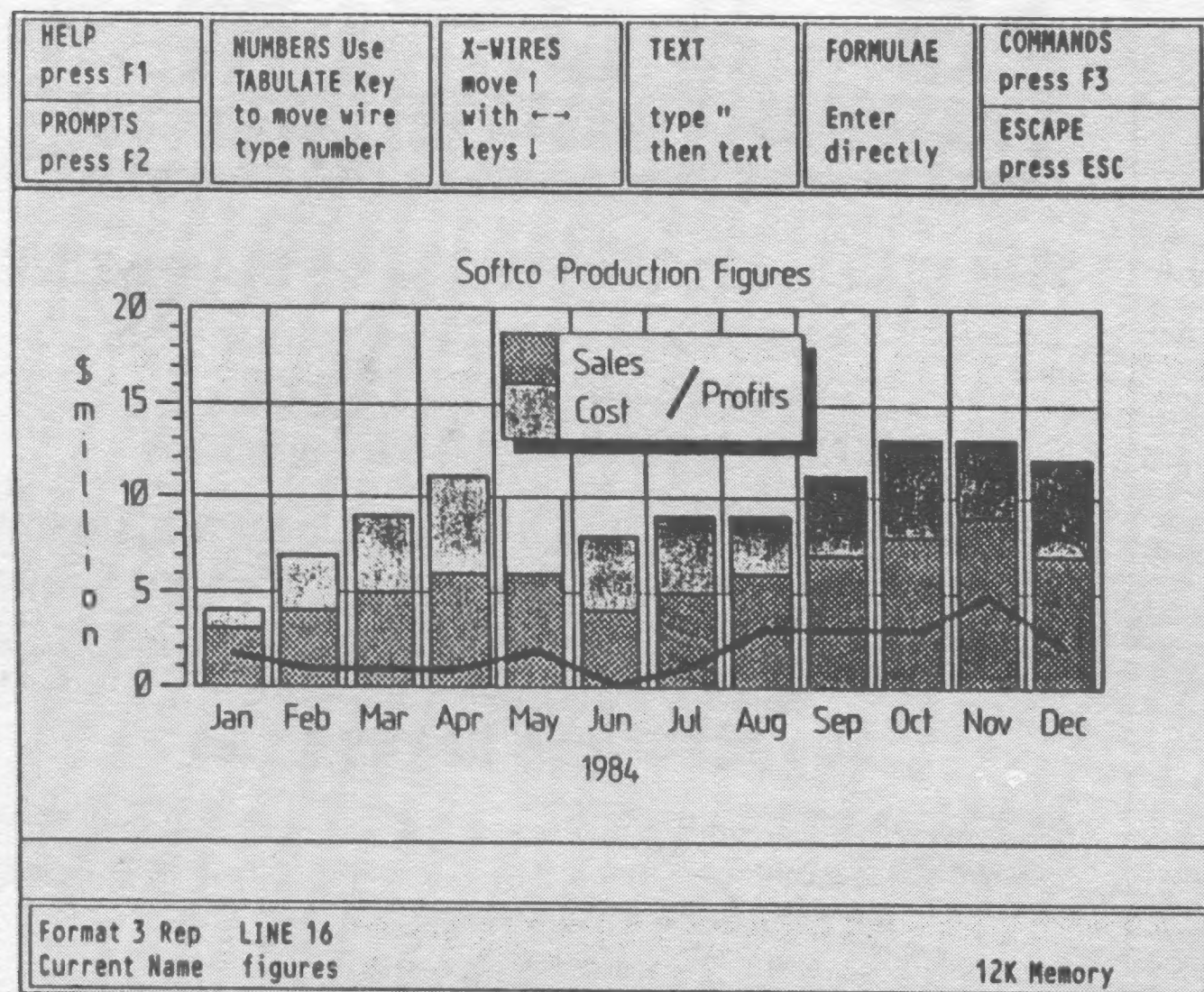
\$300

Volume III

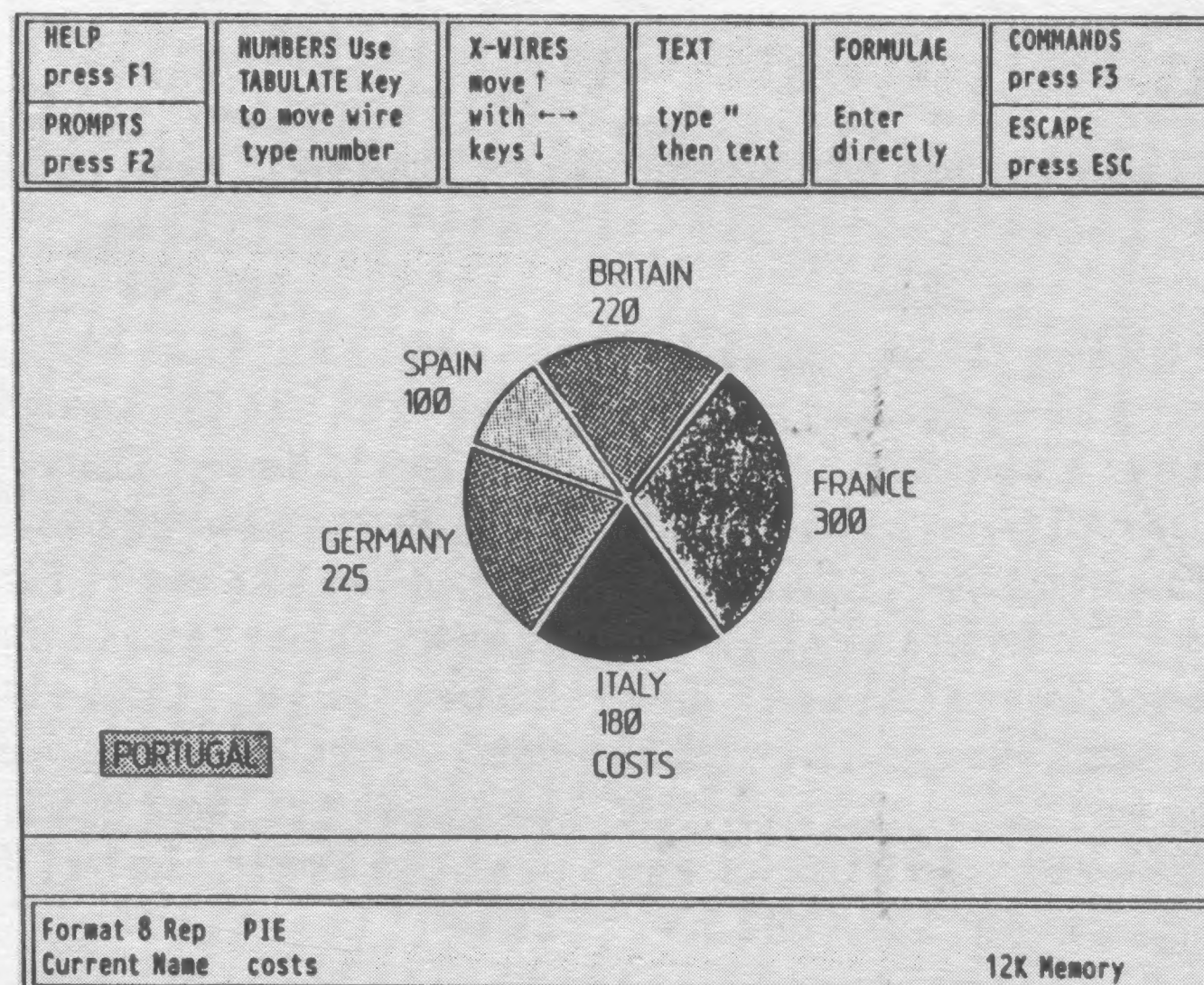
DECEMBER 1985

Number 12

## Evaluating the Sinclair QL



	A	B	C	D	E
1					
2					
3					
4					
5					
6	SALES	4000.00	4080.00	4161.60	4244.83
7	COST OF SALES	2750.00	2790.00	2830.80	2872.42
8					
9	GROSS PROFIT	1250.00	1290.00	1330.80	1372.42
10					
11	EXPENSES				
12	wages	700.00	700.00	700.00	700.00
13	advertising	100.00	100.00	100.00	100.00
14	rent	200.00	200.00	200.00	200.00
15	electricity	50.00	50.00	50.00	50.00
16	depreciation	90.00	90.00	90.00	90.00
17					
18	TOTAL EXPENSES	1140.00	1140.00	1140.00	1140.00
19					
20	NET PROFIT	110.00	150.00	190.80	232.42
21					



# December Special!



# curry computer

P.O. Box 5607  
Glendale, Arizona 85312-5607  
Telephone: 1-602-978-2902  
Telex (Via WUI): 6501267701

## 1000/1500

49 Explos. Games.....\$ 6.95  
Mast. M.C. on ZX81.....8.95  
Speech Synthesizer.....17.95  
Suntronics Kybd(2.95s/h)..39.95  
2040 Printer.....69.95+  
16K Ram Pack (\$1 s/h)....19.95  
Rocker Man, 49er ea.....9.95

## 2068

tBuff.....9.95  
Speech Synthesizer.....19.95  
Fighter Pilot.....16.95  
OmniEmu....(\$1 s/h)....40.96  
Z-Link....(\$1 s/h)....29.95  
ROM Switch.(\$1 s/h)....45.00

## QL SOFTWARE

Quazimodo.....\$19.95  
Cosmos.....24.95  
I C E .....79.95  
Lattice C.....129.95  
WD Utility.....16.95  
Cartridge Doctor.....21.95  
GraphiQL.....49.95  
Lands of Havoc.....29.95  
Matchpoint.....29.95  
Zkul.....24.95  
West.....24.95

All Sinclair Research Titles In Stock

## AFTER CHRISTMAS SPECIALS TO COMPLETE YOUR TIMEX BRAND LIBRARY

## 2068

Crazy Bugs Cart.....\$14.95  
Budegeter Cart.....9.95  
States & Caps Cart.....6.00  
Blind Alley.....6.00  
Crossfire.....6.00  
Horace & Spiders.....6.00  
Horace Goes Skiing.....5.00  
Checkbook Manager.....5.00  
Fun Golf.....5.00  
GRAB BAGS...5 TITLES (of our  
choice) FOR ONLY...\$12.95\*

FREE SHIPPING ON SOFTWARE, + = \$3.95 s/h, \$.75 s/h on Books

\*\*\*Software Order Over \$50 Go UPS 2nd Day Air Free\*\*\*

Call or Write for FREE CAtalogs - QL, T/S, Spectrum

Open Tues. - Thurs. til 9pm, Mon., Fri., Sat. til 5pm (MST)

VISA/ MASTERCARD...PHONE ORDERS...COD ORDERS ALL ACCEPTED

\*while supply lasts

## SPECTRUM \*

Bored of the Rings.....\$13.95  
Way of Exploding Fist....15.95  
Hacker.....12.95  
Lord Of Rings.....call!  
Glass.....13.95  
The Rats.....14.95

## BOOKS/MAGS

The Sinclair Story.....18.95  
Put Spect. to Work.....5.95  
Delving Deeper Spect.....7.95  
Creat. Adv. Progs.....7.95  
Sinclair User Mag.....4.00  
QL User Mag.....4.00  
Sinclair User Annual.....7.95

## QL HARDWARE/BOOKS

Sinclair QL.....299.95+  
Flat Screen TV.....99.95+  
Centronics I/F..(\$1s/h)..29.95  
Kempston Disk I/F.....169.95+  
Axion Cent/Ser Printer..259.95  
T.H. QL Handbook.....12.95  
Exploring A. I. on QL....12.95  
Exploring the QL.....4.95  
Introducing the QL.....12.95  
Quantum Theory.....10.95  
Understanding 68000.....11.95

1285

# FOOTE SOFTWARE

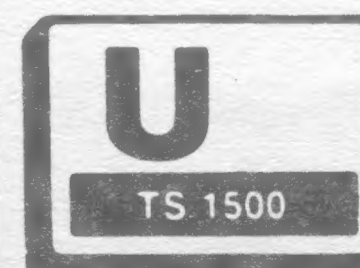
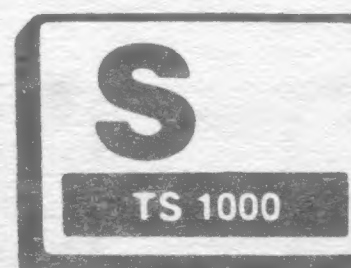
## TS2068 ROM Software

Badgammon .....\$15.00  
U.S.A. (Presidents/States & Capitols) .....\$12.95  
Calorie Counter .....\$12.95  
Advanced Math (Calculus) .....\$12.95

Add \$1.00 on all orders for shipping/handling

## FOOTE SOFTWARE

P. O. Box 14655 — Gainesville, FL 32604-4655  
904/462-1086 6-9 p.m. EST



## THE SINCLAIR/TIMEX USERS MAGAZINE

3224 Northwest 30th Avenue

Gainesville, Florida 32605

904/378-9000 or 462-1086 evenings

EDITOR ..... Joe Williamson  
PUBLISHER..... Richard Cravy  
STAFF WRITERS..... Bill Woodward & John Monkus

## SUBSCRIPTION RATES 9/1/85

Regular Subscription (U.S.) ..... \$15.00/year  
Canadian Subscription ..... \$18.00/year  
All other countries please inquire first  
Published monthly

## ADVERTISING RATES 9/1/85

Full Page .....\$75  
Half Page .....\$45  
Quarter Page .....\$25  
Eighth Page .....\$15

These prices do not include artwork or ad layout. There will be an extra charge for custom ad work. Ads should be in our offices by the 10th of month of publication.

**Classifieds:** \$2.00 per line. FREE personal ads for subscribers (no dealers).

## SUBMISSIONS

We are willing to pay for articles published (after editing). Our current rate is 10¢ per text line and 10¢ per program line (after editing). Authors should indicate if they wish to be paid when submitting material.

## CORRESPONDENCE

Please provide us with all information on your mailing label in all correspondence. Your subscription expiration is printed on your label with four digits; the first two indicate the year, the last two the month. Please tell our advertisers you saw their ad in SUM.





## Sinclair QL Microcomputer

### — A Review and Evaluation —

The Sinclair QL was first announced in Great Britain in January 1984. Sinclair was not able to begin delivery for about 5 months after that, but did manage to obtain about 15,000 back orders for the computer during that time. Early production models suffered all sorts of problems, including software that crashed, dead-on-arrival machines, and an operating system that would not fit on the motherboard, part of it being included on a ROM cartridge inserted on the back of the machine. Since then, the QL has undergone a lot of maturing. It was first offered to the American public through a mailing done by American Express (as had been done several years before with the ZX-81). Again shipments were not actually made for several months after the advertising began.

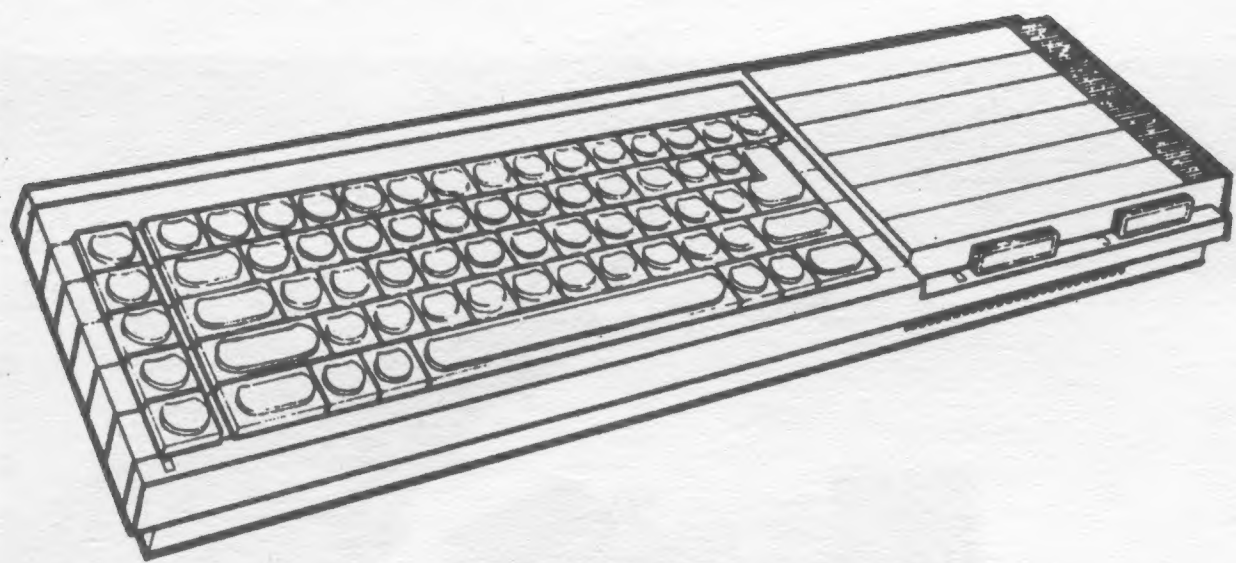
Original price of the QL in England was #399. In America it was originally offered

for \$499. September 1, 1985 the English machine was re-priced at #199. November 1, the U.S. version was lowered to \$299. Such price cuts were probably designed to move stock faster and create a greater interest in the home computer market. No doubt it also upset owners who purchased just a few days before the price adjustments and who received no rebate!

SUM Magazine purchased its QL from the English Micro Connection company, one of a number of new dealers Sinclair has for their computer in America. A printer and an RGB monitor is also available direct from Sinclair to match the QL.

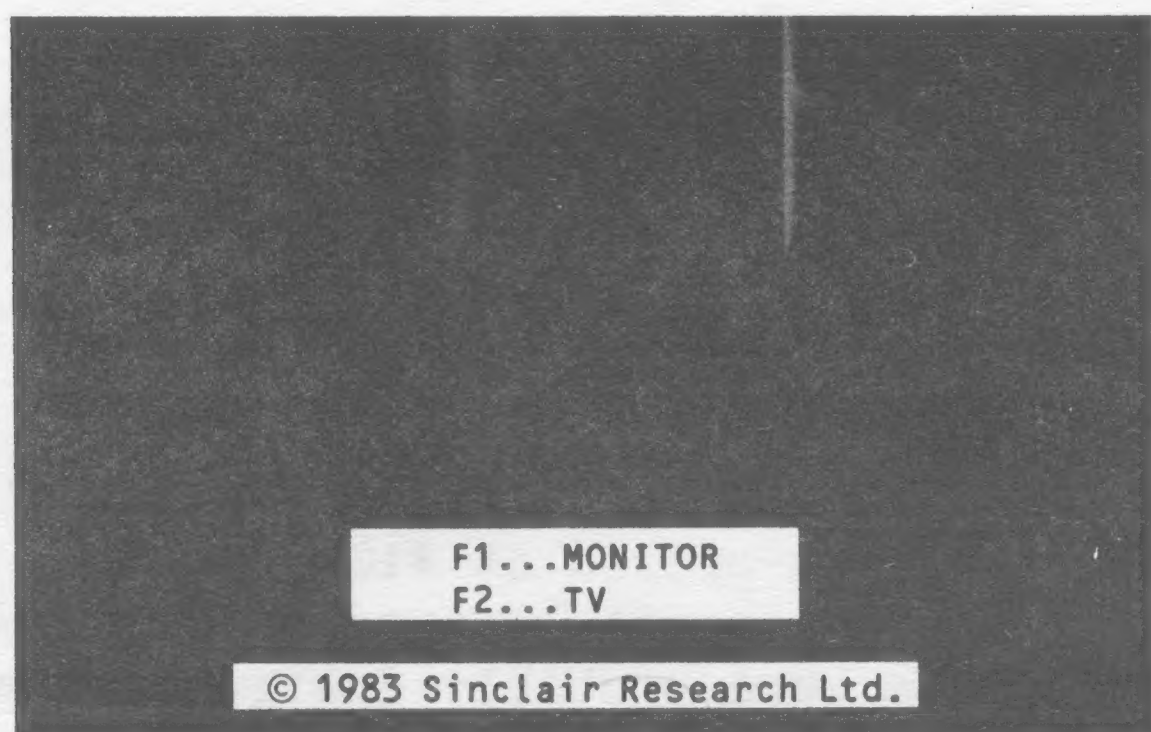
In the box SUM received was the computer, a power supply, TV switchbox & lead, two small cases containing the microdrive cartridges, and 10" x 12" four-ring black notebook with a 400 page indexed manual inside.





## Up and Running .

Removing the computer from its styro-foam packing, two small plastic legs were snapped on underneath and the computer set on the desk. It weighs about twice that of a T/S-2068, and is about 4 inches longer and 2 inches narrower from front to back. Plugging in the power supply reveals a Sinclair trait--no on/off switch. To begin with, no RGB monitor was available, and a TV seemed inappropriate, so a regular composite monochrome monitor was hooked up by cutting the plug off one end of its video cable, the two wires bared, and inserted in pin holes 2 (ground) and 3 (composite mono out) of the QL's RGB output. A separate set of typed sheets included with the manual has monitor and printer hookup instructions.



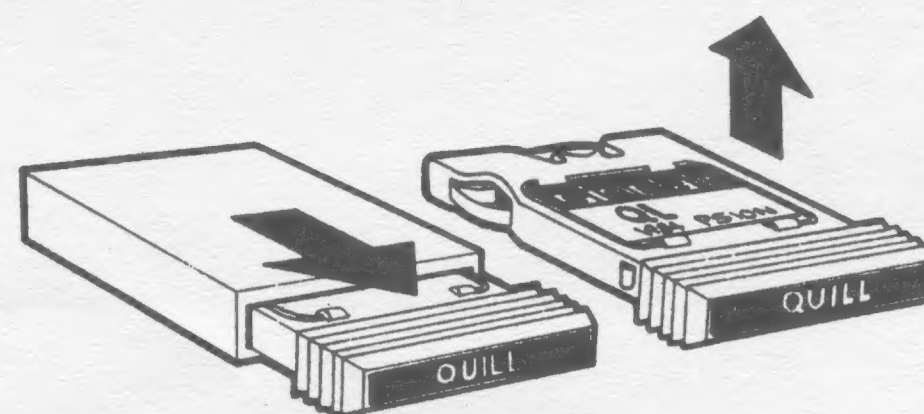
The Copyright Screen

Once on, the screen displays a choice of pressing Function Key 1 for monitor or Function Key 2 for TV. Pressing F1 put the computer in 80 column mode but the screen was unstable due to uncontrollable vertical roll. A RESET button on the right end of the keyboard returns the screen to the opening choices. F2 provides a 40 column display. 80 column mode could now be selected by typing MODE 255 and the screen did not roll at all. Apparently the F1 setting is intended for the RGB monitor Sinclair supplies, as another monitor connected to the QL did not roll as badly when F1 was selected but the edges of the

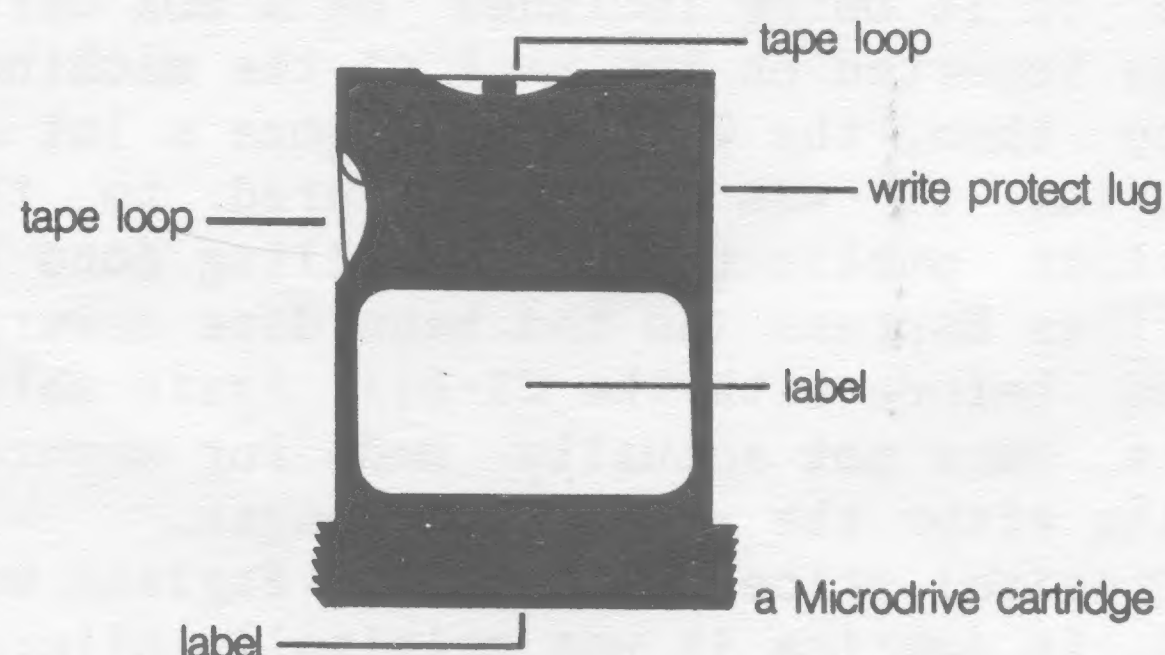
screen were not visible (called overscan). 80 column when accessed via the MODE command did not suffer from overscan on the same monitor.

The SuperBASIC language included in the QL is powerful but confusing to veteran T/S users. To those new to computers in general, it probably is even more confusing as the manual is not designed as a tutorial on BASIC. Keywords must be typed in instead of entered with single keys as on older Sinclair machines. Windows must be created to display to the screen. Enough of the keywords are different to shake the confidence of 2068 owners, but at least the syntax is still checked as each line of BASIC is entered. Full support of the microdrives is implemented in BASIC. More features and the use of the QL SuperBASIC will be covered in future SUM articles.

## Microdrives, etc.



Having never used microdrives before, the usual rule of "if all else fails, read the directions" was resorted to. The software included with the QL is a word processor (Quill), filer (Archive), spreadsheet (Abacus), and charting and graphics (Easel). These four programs are on four cartridges. An additional four blank cartridges are included. The manual instructs that the blank cartridges must be prepared for use by FORMATTING. It is recommended that each cartridge be run through the format routine several times to allow the tape to stretch or otherwise adjust to running in the drives. A simple program I devised to do this is as follows:





```

10 FOR n=1 TO 6
20 FORMAT mdv1_
30 NEXT n

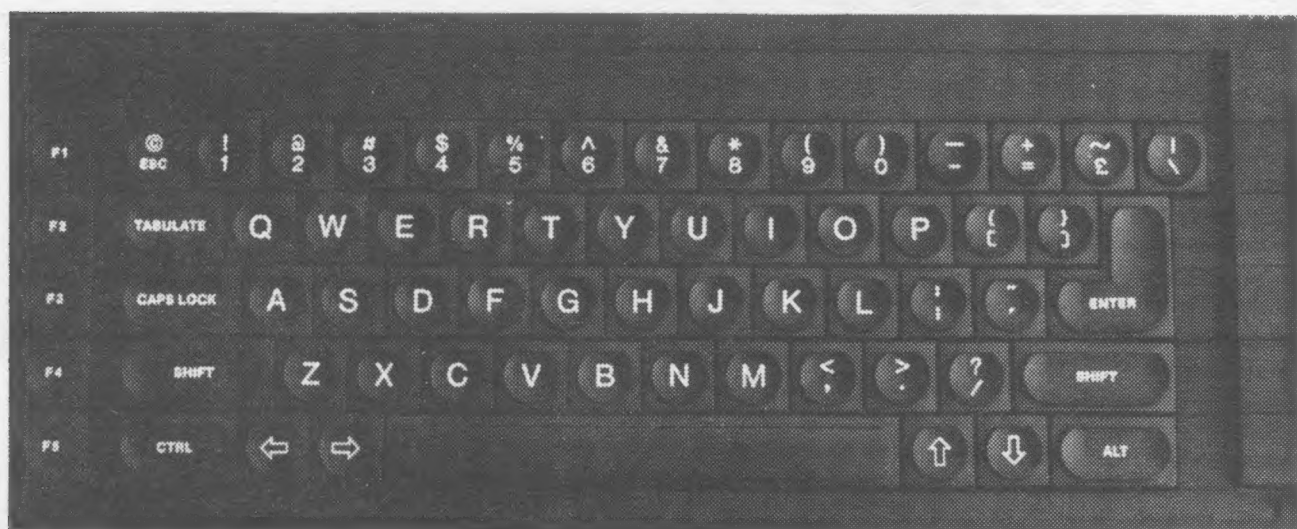
```

Placing a blank cartridge in microdrive 1 (mdv1) and running the above program will suitably format each cartridge.

After formatting, backup copies should immediately be made of each program as per the instructions in the manual. CLONEing of the original cartridges takes about 5-6 minutes per cartridge. Afterward, the original should only be used to make other clones, and the copies be used to work and run from.

Loading software from microdrive is easy. LRUN mdv1\_BOOT loads and runs each of the included programs. BOOT is actually a short BASIC program on each cartridge that accesses the machine code portion of the appropriate software. BOOT can be loaded and listed to see how it does its work.

Anyone purchasing a QL should note that additional cartridges should be purchased at the time of QL purchase since all four blank cartridges are used to back up software. Cost is about \$3 each.



By this time, the QL keyboard had given some indication of its nature. First, it is laid out in the style of a typewriter so typists find the keys in all the right places. The five function keys arranged vertically down the left side are used extensively by the included software but no way to program them for user created software could be found. The keys make a small noise on pressing, but noise alone is not enough to assure that a character was entered. It is friendlier to typists than the 2068 or Spectrum Plus ever were, but occasional duplicate letters or skipped letters are possible when typing at faster rates. On a scale of 1 to 10 (best), the 2068 gets 5, the Spectrum Plus a 4, and the QL a 7. Any user of the IBM PC keyboard knows that it rates no better, though for different reasons.

## Bundled Software



As has already been mentioned, the QL is shipped with four business application programs. While some manufacturers bundle software with their systems because they can purchase it at a very low price, and the user will soon seek other packages more to his liking, not so with the QL. When Apple Computer introduced its Macintosh, it came with two powerful packages called MacWrite and MacPaint. Many Mac owners have never found the need for another word processor or drawing package as a result! This may well be the case with the software bundled with the QL!

With so much software being written for all the computers on the market, comparisons are natural. Quill word processor would be about equal to packages selling for \$100-150 on the IBM PC. It is not as powerful as the newest word processors, but compares favorably to software introduced a year or more ago. It will probably hinder the introduction of other word processors for the QL since it has no glaring faults.

Abacus is certainly no Lotus 1-2-3 but will give Multiplan, a popular package for other machines, a run for its money. Archive is undoubtedly the most powerful of the four...in fact, so powerful that some users may become discouraged before learning to use it. It certainly would go for \$150-250 on the IBM market. Already many "applications" packages are appearing for it which let the user tap its features in specific applications without having to learn how to program it. Easel is a business chart program, and more. Similar software may sell for \$200 for the IBM. David Ahl of Creative Computing reviewed an English version of the QL in December 1984. At a time when the QL sold for \$499 he enthusiastically stated that Easel by itself would justify the purchase of a QL.



Here at SUM the software has not been fully tested and used so full reviews are not possible at this time. Future issues of SUM will include columns on getting the most out of the Sinclair QL and its software. There are some features that can be discussed however to give potential purchasers an idea of each program's power.

Quill is a very user friendly software package allowing light to medium word processor users to put their QL to work right away. As the QL comes standard with only serial ports, a serial printer must be used for output or a "serial to parallel" converter be purchased for use with a centronics interface printer. When Quill is

loaded from microdrive, it presents an 80 column (characters per line) screen if F1 was selected when the QL was first turned on, or 64 columns if F2 (TV) was chosen. A 38 column mode can also be selected once in the program. In fact, the user can go back and forth at will between 40, 64, and 80 column. The 64 character display is the most pleasing and recommended for most work. Color of the print on the screen can

Entering text consists of merely putting the cursor where you wish to type, and beginning. More experienced users can show more lines on screen and turn off the command lines at the top of screen by use of F2. F3 gives access to commands allowing selection of Margin, Header, Footer, Tabs, Justification, Searches, Block Copy or Delete, Save, Load, and File Maintenance. F4 selects typestyle to be output to printer: Normal, Bold, Underline, Superscript or Subscript.

What is displayed on screen accurately reflects the actual printout. Page breaks are shown as well as bold, underline, and super- and subscripts. Files created on the other applications can be IMPORTed or MERGED into a Quill document. A very useful command is HYPHEN which allows a "hidden hyphen" to be inserted in a long word. This hyphen will be used by Quill if it has to separate the word to get proper word fit on a line; if not used, the hyphen is ignored, but may be used later if that section of text is reformatted and a hyphen becomes necessary. Paragraphs and lines are automatically reformatted as corrections, additions, and deletions are made.

6



the printer of choice. As only normal, bold, underline, and super- and subscript is supported in Quill in its original version, other options like pica or elite, italic, near letter quality, proportional, or other features your printer supports must be programmed in by assigning printer codes to some of the unused characters on the keyboard. Unfortunately this is not explained in the Quill section of the manual but in the very back of the manual under "Information".

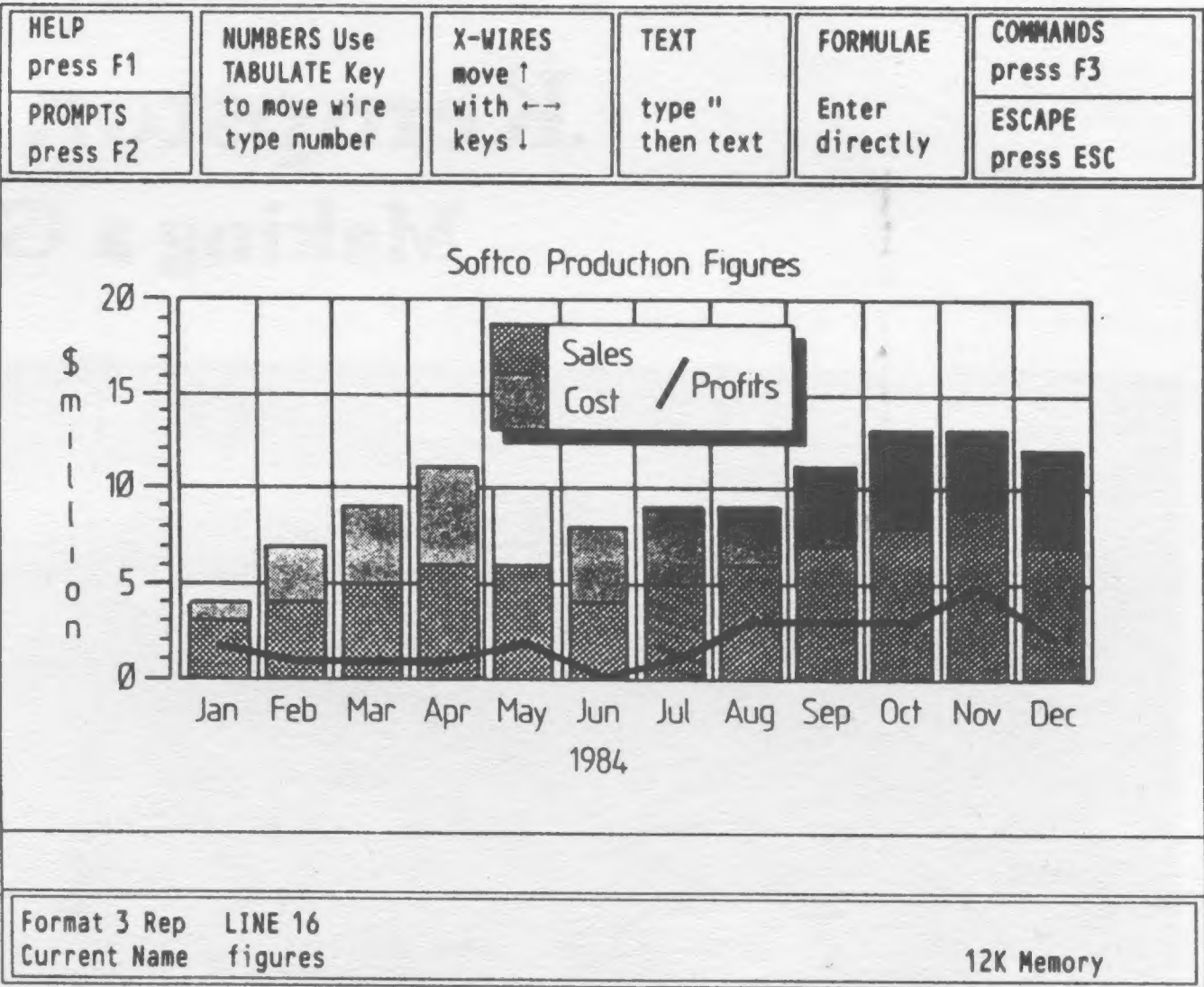
Other Software

HELP press F1	CURSOR press ←→ GOTO CELL press F5	DATA & FORMULA enter directly & press ENTER	TEXT type" followed by text & ENT.	COMMANDS press F3 ESCAPE press ESC
PROMPTS press F2				
A B C D E				
CASH FLOW				
January February March April				
SALES	4000.00	4080.00	4161.60	4244.83
COST OF SALES	2750.00	2790.00	2830.80	2872.42
GROSS PROFIT	1250.00	1290.00	1330.80	1372.42
EXPENSES				
wages	700.00	700.00	700.00	700.00
advertising	100.00	100.00	100.00	100.00
rent	200.00	200.00	200.00	200.00
electricity	50.00	50.00	50.00	50.00
depreciation	90.00	90.00	90.00	90.00

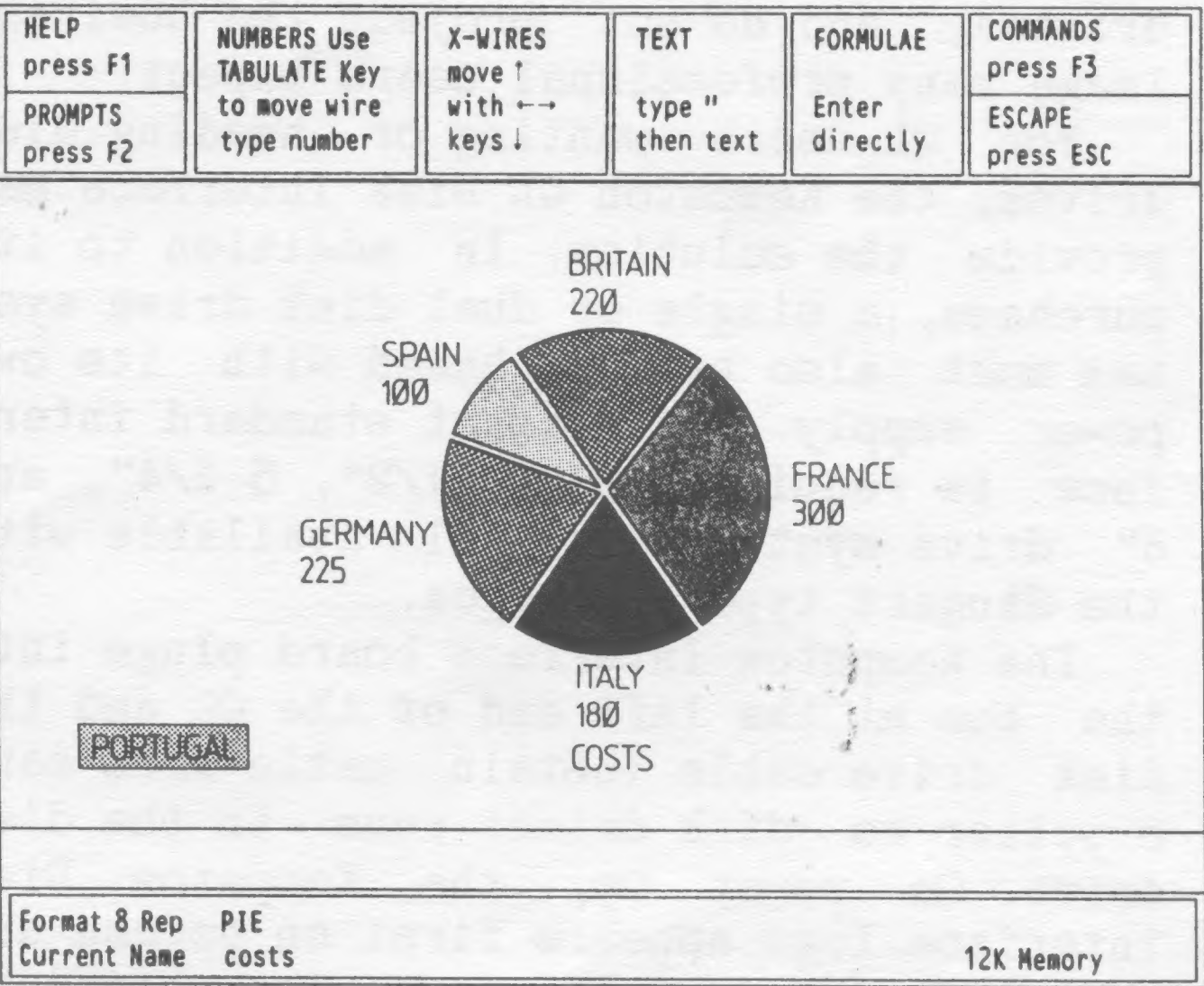
CELL CONTENTS GRID USED MEMORY 23K

The Abacus spreadsheet and other software have not yet been fully tested. But the following facts have been garnered from the manual. A spreadsheet as large as 256 rows or 64 is possible (but not both with only 128K). Rows, columns and individual cells can be assigned names and then referenced later in formulas by those names. Column widths are variable; spreadsheets can be linked together.

Archive is a database filing system in the style of dBaseII--that is, it has its own programming language to allow accessing its full power and versatility. It is supposed to be fully interactive with the other three software packages in importing and exporting data. Files can be sorted, searched, linked, designed, and printed out in almost any manner. As already mentioned, a number of "templates" or pre-programmed filing frameworks are already available and several usable examples of simple databases are included in the manual. This is undoubtedly the most powerful of the programs included with the QL and, again, could justify the purchase of the



whole system just for it. Easel enables the creation of charts: bar, line, pie, mixed lines and bars, horizontally or vertically. And with just a couple of keystrokes the same data can be replotted in a different format and then toggled back to the first. Printout to an Epson printer (and probably others) is outstanding. Text can be entered anywhere on or around the chart. Data can even be defined or manipulated by math functions and formulas and then displayed.

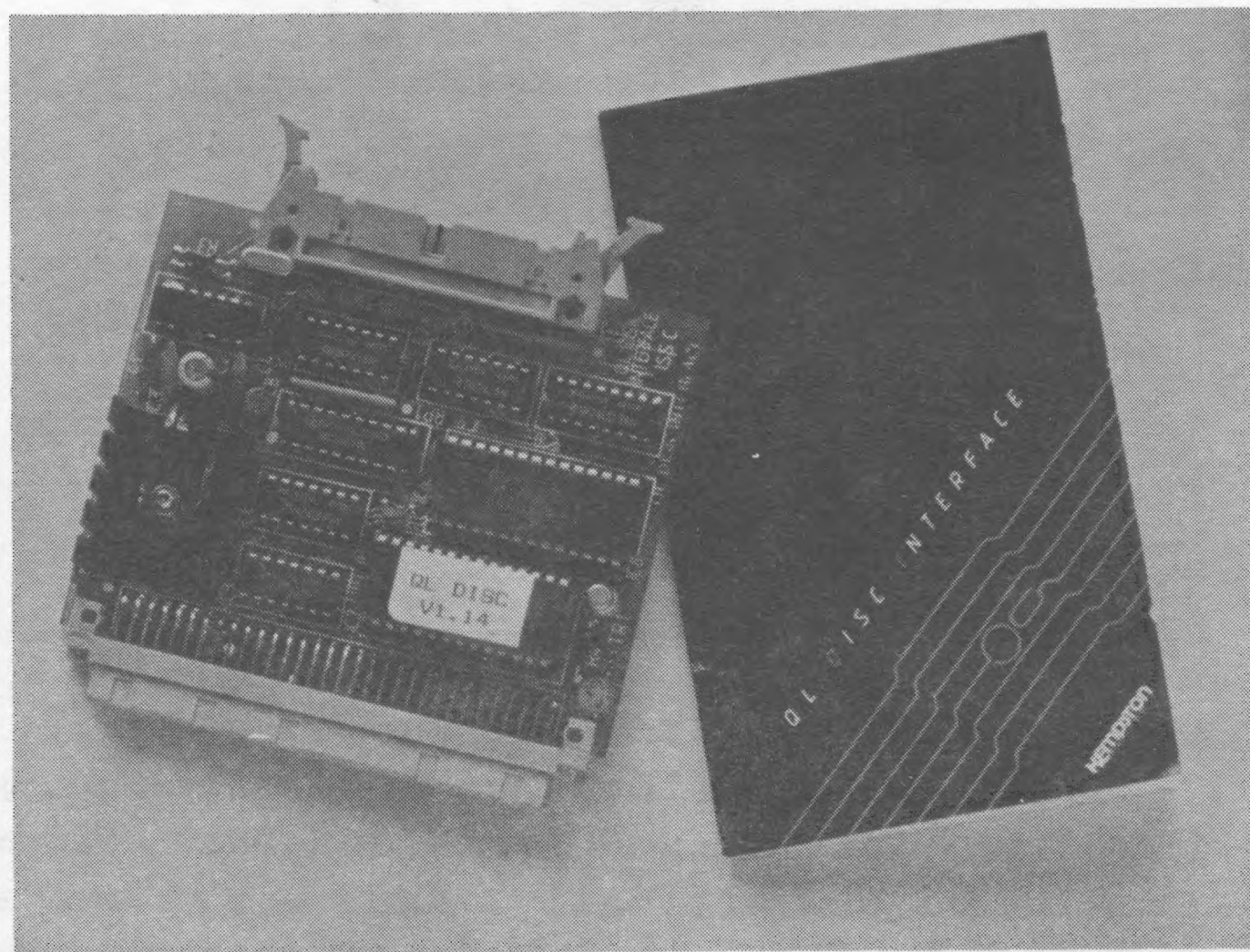


In depth reviews and helpful articles for beginners and more advanced users will be included in future issues. Meanwhile, why not join the revolution and learn what all the excitement is about. A number of QL dealers are regular advertisers in SUM. -- Richard Cravy



# Kempston QL Disk Drive

## Making a Good Thing Better



The Sinclair QL comes equipped with two Microdrives. They offer much faster access and reliability (as well as convenience) than older cassette tape systems. But Microdrives do have their limits. They provide only about 100K of storage, suffer some reliability problems (tapes, not the drives), and do not project the business image many professional users expect.

For QL users wanting or needing disk drives, the Kempston QL Disk Interface may provide the solution. In addition to its purchase, a single or dual disk drive system must also be purchased with its own power supply. The Shugart standard interface is required. 3", 3 1/2", 5 1/4", and 8" drive systems are all available with the Shugart type interface.

The Kempston Interface board plugs into the bus at the left end of the QL and the disk drive cable (obtain cable from same supplier as disk drive) runs to the disk drive. On power up, the Kempston Disk Interface logo appears first on screen and then the standard QL logo. The board is well made and once installed does not have to be removed from the machine.

QL users know that the Microdrives are accessed by name: mdv1 and mdv2. The disk drives may be addressed as flp1 and flp2. In using commercial software that does not expect a disk drive to be connected, but only the Microdrives, "FLP\_USE mdv" will allow the software to access the disk when it makes a Microdrive call.

Here at SUM, our QL is connected to a pair of Amdek 3" drives known as Amdisk 3 and available from companies like Ramex and English Micro Connection. Hooking the hardware up was easy.

It took a little longer to figure out how to use the Quill word processor with the disk drives. What is said here about Quill will also be true of the other software that comes with the QL. To configure Quill to work with the Kempston interface and disk drives, two diskettes must first be FORMatted. Then a copy of Quill on Microdrive wafer is put in mdv1 or mdv2 and the COPY command used to transfer copies of each file on the wafer to diskette. Next, the CONFIG\_BAS program is LOAded either off the wafer or the diskette. Type "flp\_use mdv" and ENTER. Now type RUN and ENTER to run the configuration file already loaded. Change all "mdv1" references to "flp1" and all "mdv2" references to "flp2" (or "flp1" if only one disk drive). Save the new CONFIG\_SYS file to disk. Now Quill can be loaded and run from disk drive, and files created by Quill will save and load from disk drive.

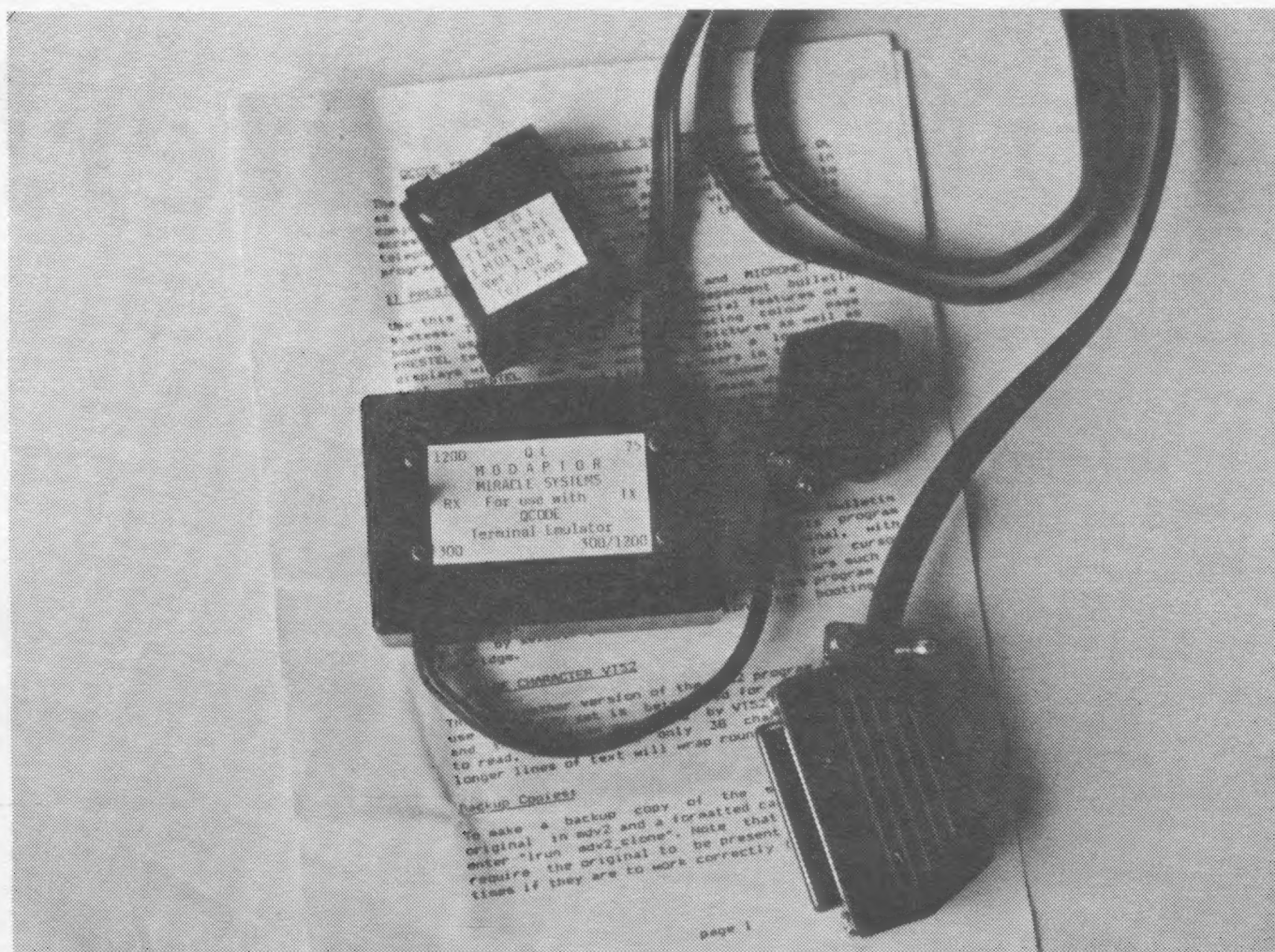
A number of extra file commands are in the Kempston ROM: STATUS, RENAME, TRUNCATE and VIEW are all pretty self-explanatory. Since the QL can use windows, special commands for working in windows are included: WDIR, WSTAT, and WDEL. Various commands for random access saving and accessing of data are also available.

After several weeks of use, SUM's QL Microdrive has not yet lost a wafer, but the experience of others shows that it is inevitable. Our disk drives and Kempston interface have also performed admirably, so that now all word processing is done to and from disk at a speed roughly 6 times faster than Microdrive. My belief is that home users of the QL will be happy with the Microdrive units for a long time as long as they keep at least two copies of all software in addition to the originals. Business and "power" users of the QL will want the convenience, safety and flexibility of disk drives. The Kempston unit performs admirably. Other manufacturers have similar units out. -- Richard Cravy



# Using a Modem with the QL

One of the most exciting things that a computer can be used for is telecommunications. The QL is not behind others in this regard. A nifty little device called the "QL MODAPATOR" provides the special cable and software needed to connect the QL to any standard modem. In reviewing the Mod adaptor I used a Hayes Smartmodem.



The Mod adaptor plugs into SER2 (serial port 2) of the QL and into modems with DB-25 serial connectors. The software is on a microdrive cartridge which should immediately be put in MDV2 (microdrive 2) and copied using the "clone" program found on it. Note that the original cartridge will still need to be inserted in MDV2 as one part of the cartridge will not copy and will need to be accessed by the software occasionally (this was done for copy protection).

Boot the software with LRUN MDV1\_BOOT and wait. An opening menu offers several options including help files, Prestel and Micronet access, and VT52 access. As Prestel and Micronet are English systems, one of the two VT52 selections should be made for accessing American BBSs (Bulletin Board Systems), other modem equipped computers, and services like CompuServe or the Source. Two VT52 selections are available to allow for 80 column or 40 column screen display.

As an aside, the software also provides QED, a built-in "word processor" allowing the creation of text files which can later be transmitted to other systems.

After selecting VT52, another screen is loaded which allows you to configure your "terminal" (the QL) to the specifications of the BBS or system you are preparing to access. These include baud rate of transmission and reception, handshaking, parity, etc. (information generally available from the system you are going to access). Two switches on the small box in the middle of your RS-232 cable going to the modem should be set to match your software selections. Finally, CTRL 3 (hold down on the CTRL key while pressing "3") should be entered to go into the terminal mode. CTRL 1 returns you to "local" mode if you later discover you need to re-configure your terminal.

With the Hayes Smartmodem plugged into the wall where the phone normally goes, commands given in the Hayes manual can be used. (Make sure the modem is turned on.) To call a BBS such as the Zebra BBS, type AT DP17182962229. "AT" signals a command to the modem. "D" is for dial, while "P" is for pulse ("T" could be used for touchtone phone lines). The long string of numbers is simply the phone number including the "1" the phone system requires for long distance numbers. The commands used by other modems may be different but the basic process will be the same.

Though a long time computer user, this was my first experience with telecommunications. It took a little experimenting as the instructions included with the Mod adaptor are not always clear. Experienced users would probably have little trouble. The fact that the Mod adaptor was designed for the English market means that much of the 4 pages of instructions are directed at the Prestel and Micronet Systems over there and have little meaning to us unless someone wants to have some LARGE long distance phone bills. Nevertheless, I can highly recommend the Mod adaptor to all who wish to "reach out and touch someone" with their new QL.

QL Mod adaptor with QCode Terminal Emulation Software is made by Miracle Systems Limited and is available from the English Micro Connection, 15 Kilburn Court, Newport, RI 02840; 401/849-3805. Price: \$65.

-- Richard Cravy



# English Micro Connection

"Bridging the Atlantic to Bring You the Best In English Hardware and Software"

## Choose Your New Computer!



### Sinclair QL — \$299<sup>95</sup>\*

128K RAM and 68008 CPU (similar to Macintosh) with two built-in microdrives. Comes with word processor, spreadsheet, database, and charting programs. 400 page manual, 2 RS-232 ports, joystick ports, real keyboard, RGB, monitor and TV outputs. Memory expandable to 512K and disk drive interfaces available from third parties. Comes with "Cartridge Doctor" microdrive utility.



### Spectrum 128 — \$259<sup>95</sup>\*

Now available! This is the Spanish version of the brand new Spectrum 128... **fully Spectrum compatible** but with **128K of bank-switched memory** and with an added keypad (English version not yet available). Keyboard, screen messages & manual in Spanish but with manual translated into English. Built-in full screen editor, RGB and TV output, RS-232 port. Improved keyboard over Spectrum Plus. Comes with two 128K games.

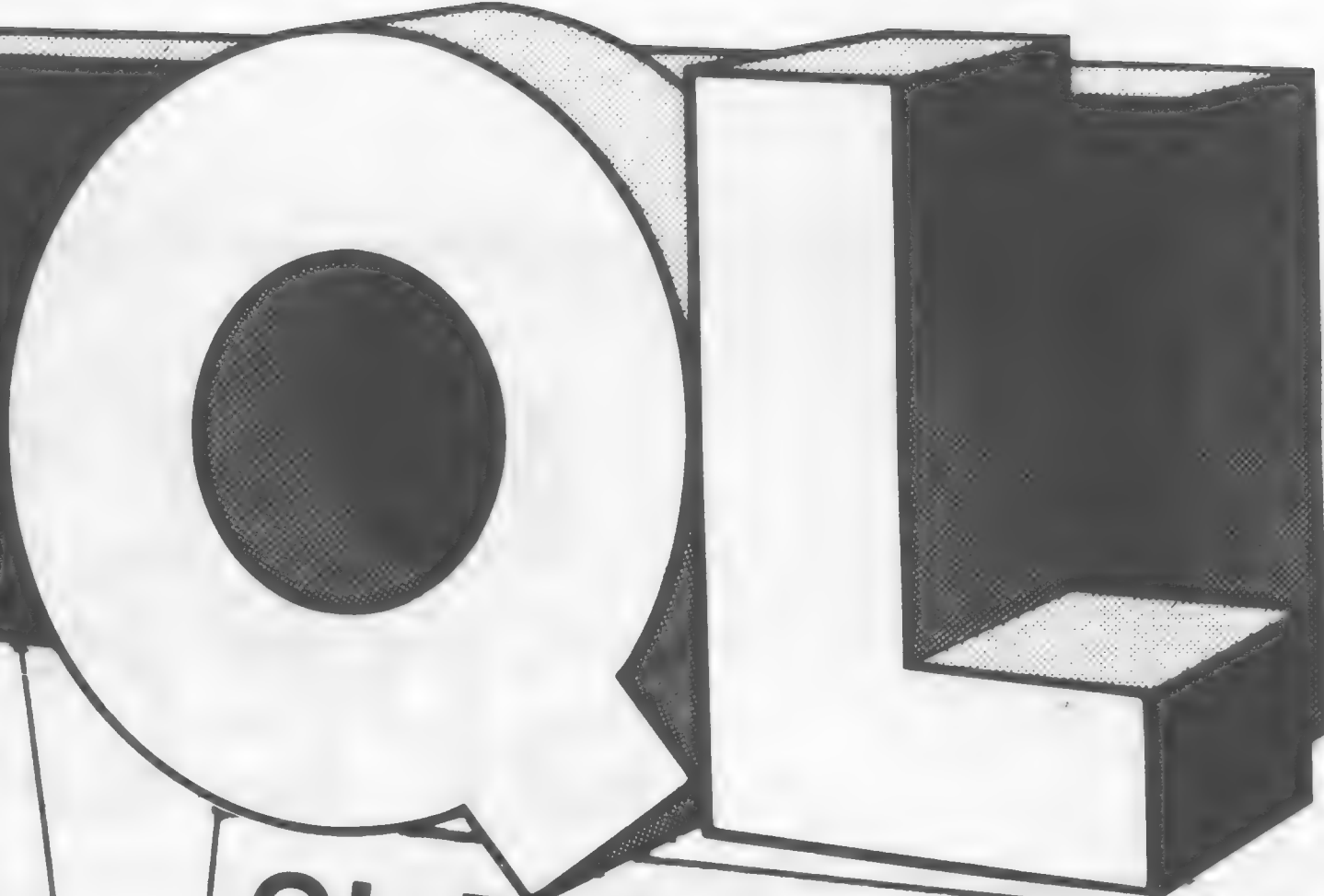
\*Add \$10 shipping and insurance

SEND FOR OUR FREE 36 PAGE CATALOG!

English Micro Connection • 15 Kilburn Court • Newport, RI 02840  
401/849-3805



# RELEASE THE POWER OF THE



## QL C \$129.95

A professional specification C Compiler for the QL1 Designed by **LATTICE®**.

QL C is a complete implementation of the Kernighan and Ritchie definition of C. QL C is endorsed by Sinclair Research; it is the most powerful and fully featured C compiler available for the QL.

- > Complete Kernighan and Ritchie implementation.
- > Proven **LATTICE®** design, compatible with **LATTICE®** compilers on IBM PC, etc.
- > True compiler producing native 68000 code.
- > Powerful data types such as pointers, arrays, structures, and unions.
- > Comprehensive library of UNIX, QDOS and utility functions.
- > Over 90 detailed error messages.
- > Separate compilation.
- > Macros, conditional compilation, and other pre-processors.
- > Linker to link program modules; will also link to other relocatable binary modules (assembler, etc).
- > Chosen by Sinclair Research as the C compiler for the QL.

## QL PASCAL \$99.95

A full ISO standard Pascal compiler for the QL1  
A fast, powerful compiler, endorsed by Sinclair Research, and ideal for commercial, educational and personal use.

- > True compiler producing native 68000 code.
- > Fast, single pass compilation without intermediate stages.
- > Complete implementation of ISO 7185 - the international standard for Pascal - making it ideal for commercial and educational use.
- > Direct addressing of the full QL address space.
- > Programs can be linked with assembler and BCPL modules.
- > Comprehensive error handling: over 150 different compiler errors and 30 runtime errors are recognised.
- > Any length variable names and full 32-bit integers.
- > Easy to use interfaces to QL windows, graphics, traps, screen handling, file operations, etc.
- > Will handle very large sets and arrays.
- > Chosen by Sinclair Research as the Pascal compiler for the QL.

## ASSEMBLER \$49.95

The best selling macro assembler for the QL1. A professional quality assembler with many useful features for the serious programmer.

- > Standard Motorola 68000 mnemonics.
- > Macro expansions.
- > Over 160 explicit error messages.
- > Produces code which can be EXECed, and run as a concurrent job.
- > External references allow linkage to high level languages such as QL C.
- > Integral linker allows up to 20 assembler programs to be linked together.
- > Position independent, absolute or relocatable code can be produced.
- > Conditional assembly.
- > Large range of directives.
- > Fully formatted listings.
- > 30 character variable names and 32-bit values.

Every DEVELOPMENT KIT includes Metacomco's popular screen editor, and a detailed manual. all KITS will operate either on a standard QL or else using QL peripherals such as floppy disks or memory expansion.

## BCPL \$79.95

BCPL is a popular and elegant systems programming language ideal for writing games, utilities, and applications programs. It combines the convenience of high level language with the flexibility of an assembler.

- > True compiler with separate compilation.
- > Includes all the standard BCPL functions.
- > Full runtime library includes interfaces to QDOS graphics, file operations, window handling, etc.
- > Exception handling provides diagnostics for debugging.
- > Link loader allows linkage of separately compiled segments.
- > BCPL modules can be linked with Assembler and Pascal modules.
- > 32-bit variables use the full QL address space.

## LISP \$79.95

LISP is one of the key programming languages of the '80s, widely used for research into expert systems and artificial intelligence.

- > Full support of QL features including window graphics, and screen handling.
- > Compatible with Acornsoft Lisp for the BBC micro, but with many extra features.
- > Interpreter.
- > Turtle graphics make it easy to control the QL's graphics.
- > Structure editor allows alteration of data structures.
- > Prettyprinter displays programs in structural format.
- > Tracer to aid in debugging.
- > Garbage collection automatically recovers spare memory space.
- > 28-bit integers and 250-character names.

Available from Curry Computer, Zebra Computer, English Micro Connection, and many QL dealers or direct from Metacomco. Dealer inquiries welcome.

# METACOMCO

5353 #E Scotts Valley Drive  
Scotts Valley, CA 95066  
Tel: CA 800-GET-META, US 800-AKA-META

Phone today or mail this coupon to:

Tenchstar, 5353 #E Scotts Valley Drive, Scotts Valley, CA 95066

Please send me: QL C \$129.95 ☐ QL PASCAL \$99.95 ☐ ASSEMBLER \$49.95 ☐  
BCPL \$79.95 ☐ LISP \$79.95 ☐ More Information ☐ Check enclosed for \$ \_\_\_\_\_

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

ZIP \_\_\_\_\_

TEL. NO. \_\_\_\_\_

Price includes postage and packing on the mainland only. Delivery allow up to 28 days.



# HOLIDAY SPECIALS

**SINCLAIR QL**

**299.**

INCLUDES-WORD PROCESSOR, DATABASE, SPREADSHEET & GRAPHICS

**TS 2068**

**149.**

INCLUDES FIVE FREE PROGRAMS

**TS 1000**

**40.**

COMES WITH FREE 16K MEMORY PACK

**NEC Color Monitor**

**165.**

12INCH SCREEN

**PANASONIC Printer**

**95.**

REQUIRES AERCO, TASMAN OR A & J INTERFACE

**ZX 81 KIT**

**49.**

COMES WITH FREE 16K MEMORY PACK

FREE CATALOG AVAILABLE ON REQUEST . . . . THIS AD EXPIRES DEC 31st 1985

ORDER LINE  
415-665-6161  
INFORMATION  
415-665-8330

**SUNSET ELECTRONICS**  
**2254 Taraval Street**  
**San Francisco, CA 94116**

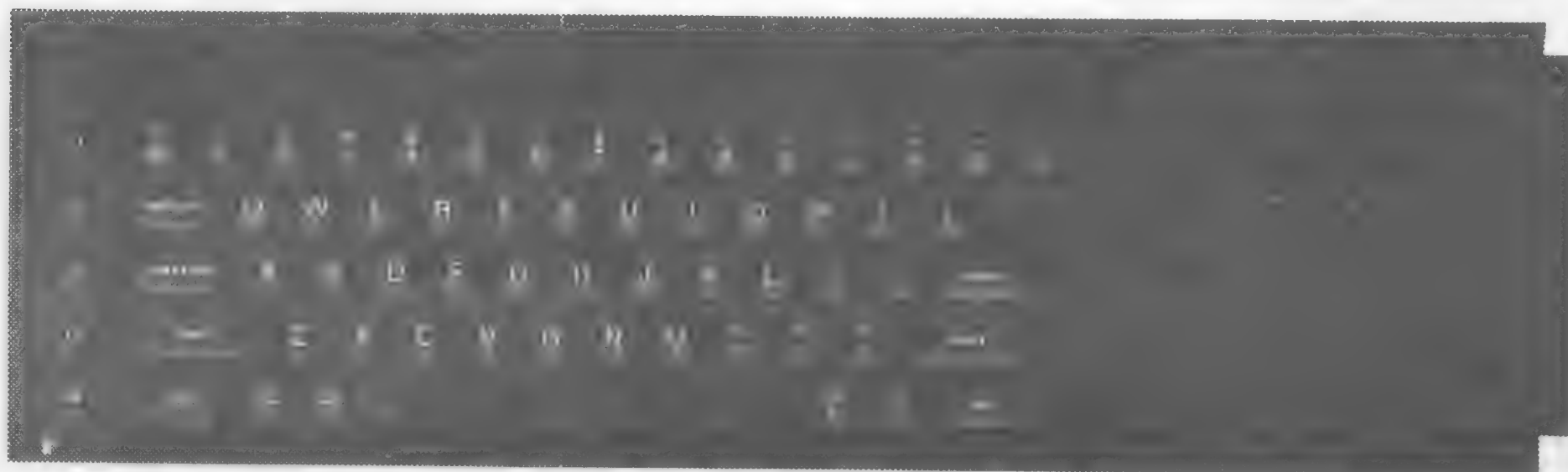
HOURS  
MON- FRI  
9AM - 6PM  
SAT 9 - 5



# THE REVOLUTION CONTINUES

## THE SINCLAIR QL . . . . . ARRIVES!

People are already starting to find out about this remarkable new computer from Sinclair, at Foundation Systems, we decided to have a revolution of our own! . . .

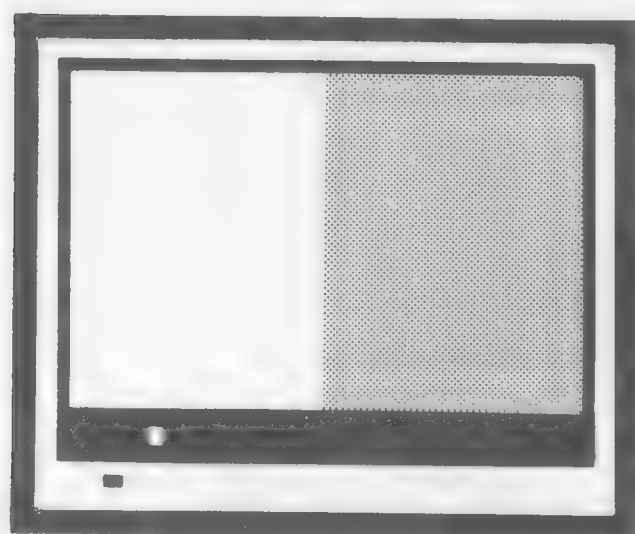


### REVOLUTIONARY!

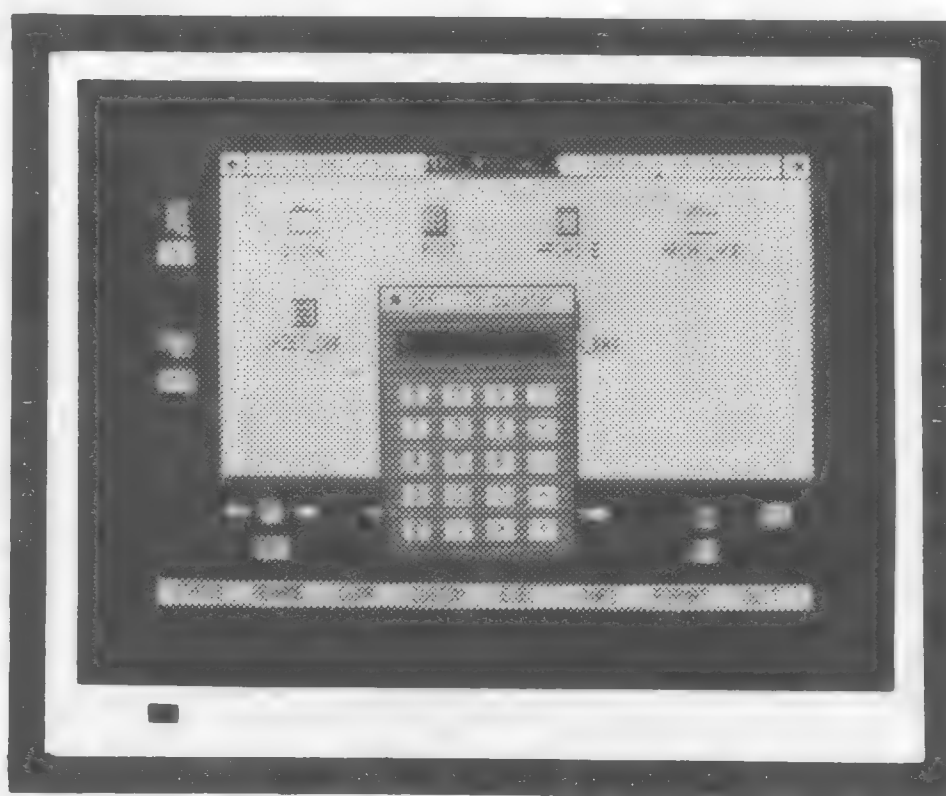
**\$299.00** with FREE ICE!!

**The QL Features:** • 32 bit 68008 microprocessor • 128K ram std. • expands to 640K • 2 microdrives • 2 RS-232 ports • 12 x 256 color • MONO and RGB video

**Comes With:** • QL Word Processing • QL Spreadsheet • QL Graphics • QL Database • Full sized keyboard • Multitasking • LAN network capability



*The QL from  
anyone else  
for \$299.00*

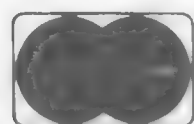


*The QL from  
Foundation Systems  
for \$299.00  
with FREE ICE!!  
(Icon Controlled  
Environment)*

### What is ICE?

ICE is a ROM based, powerful desktop utility, for the Sinclair QL. ICE simplifies all QL housekeeping procedures by replacing extensive BASIC and QDOS commands with an easy to understand ICON driven screen that represents your desk, with pictures of the things you would expect to find such as a working calculator, calendar and clock.

Powerful folder features allow you to take actions on many files at once. You can handle Loading, Saving, Directories, Import and Export, manipulate files or be rid of them forever by dumping them in where else?, but the Garbage Can! The ICE package, (a \$100.00 value), is included FREE!! when you buy your QL from Foundation Systems.



TO ORDER CALL:  
1-313-781-5800

*Call for pricing on the many software  
and hardware packages for the QL.*

## Foundation Systems

All The QL Support You Need

17620 26 MILE RD.  
WASHINGTON, MICHIGAN 48094



# CTM

The monthly magazine with a natural blending of two popular hobbies — Ham Radio and Computers

U.S.A. .... \$15.00 for 13 issues  
Mexico, Canada ..... \$25.00  
Foreign ..... \$35.00(land) - \$55.00(air)  
(U.S. funds only)  
Permanent (U.S. Subscription) ..... \$100.00  
Sample Copy ..... \$3.50



Circulation Manager  
1704 Sam Drive  
Birmingham, Alabama 35235  
Phone 205/854-0271

## QuarTerS

A quarterly publication for the Timex/Sinclair computer user.

"...Every issue has been full of helpful articles, great software reviews and new product information. Thanks for publishing a needed magazine for TS computer owners and for keeping it easy to read and understand. I have read other TS computer magazines, but none have been as helpful to me as QuarTerS...I'm really glad I subscribed to QuarTerS..."-C. Bower

One year subs. only \$8.00. Overseas only \$11.00(US\$). Check or MO to: WMJ DATA SYSTEMS, 4 Butterfly Dr, Hauppauge, NY 11788.

**FREE FIRST ISSUE**

**SUM**

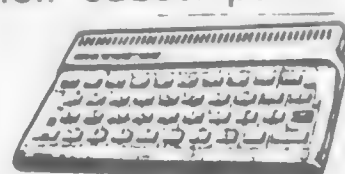
Send this coupon to WMJ Data Systems, 4 Butterfly Drive, Hauppauge, NY 11788. You will receive one free issue of QTS and we will bill you for a one year subscription. If you do not want to subscribe write cancel on the bill and keep your free issue.

NAME \_\_\_\_\_  
STREET \_\_\_\_\_  
CITY \_\_\_\_\_  
STATE \_\_\_\_\_ ZIP \_\_\_\_\_

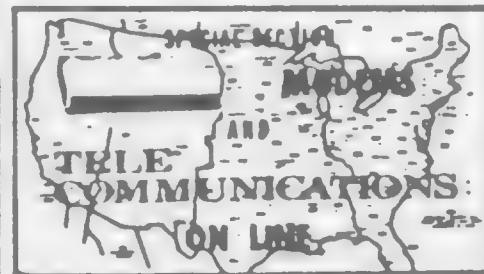
# T-S Horizons

Affordable Quality for the Timex Computer User

Each issue brings you 40 pages of usable information, program listings, product reviews, programming articles, hardware projects, and applications for your computer. T-S HORIZONS features nationally known authors like Paul Hunter, Gordon Young, and others. The price is ONLY \$15.00 for a full year (12 issues) AND for a limited time only, new subscribers will receive our special telecommunications issue (#7, see below) \*FREE\* with their subscription.

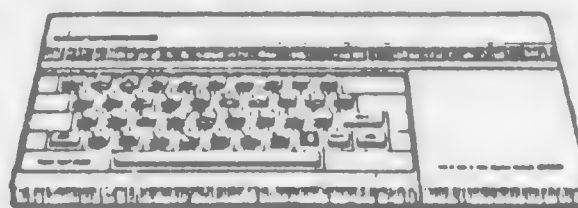


**T-S Horizons**  
Affordable Quality for the Timex Computer User  
August No. 7 \$1.25



TS-2068 PROGRAMS  
TIPS  
REVIEWS  
Rumors & Gossip  
TS-1000/1500 BANK SWITCHING - 4  
"WORM" - CONCLUDED  
POWER SUPPLY?  
New Column

**TIMEX sinclair**



IN T-S HORIZONS #7

\* Byte Back Modem Review  
\* 2068 Programming Tips

IN T-S HORIZONS #7

\* How a Compiler Works \* Telecommunications for Beginner  
\* Book & Game Reviews \* Rotating Globe Routine  
Articles By Gordon Young and Paul Hunter \* Sinclair Info. Net.  
\* TS-1000 Power Supply - and more!!!

Enclose \$15 (US) for 12-issue subscription, plus \*FREE\* back issue (while supplies last). \$21 Canada, \$25 other foreign. Extra back issue/sample:\$2.00.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

SEND TO:

T-S HORIZONS  
2002 Summit Street  
Portsmouth, Ohio 45662

STATE, ZIP \_\_\_\_\_

**SUM** ★ SATISFACTION GUARANTEED ★

Timex / Sinclair Owners...  
**TAKE A LOOK!**



**TIME DESIGNS  
MAGAZINE**

FOR YOUR  
2068 - 1000/1500 - SPECTRUM

\* Readers nationwide (and Canada too!)  
\* 36 Illustrated Pages  
\* Published "On Time"  
\* Interesting Articles / Programs  
\* Current Information  
\* Exclusive "T/S Shopper" Guide

**ONLY  
\$15 year  
SIX ISSUES**

**SUBSCRIBE TODAY!**

SAVE \$3.00 Off Newstand Price...Send Coupon (or a copy) with Check or Money Order for \$15 (U.S. Funds Only) to address posted below. We will start your subscription right away upon receipt of your order.

TIME DESIGNS MAGAZINE COMPANY  
29722 Hull Rd. • Clifton, Oregon 97017

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City / State \_\_\_\_\_ Zip \_\_\_\_\_







## Preview: Sinclair 128



SUM MAGAZINE has recently been able to obtain a Spanish version of the new Spectrum 128 Sinclair computer for evaluation. Next month we intend to have a full review and description of it. This computer is expected to be available in an English version on the English market in about two months. Except for Spanish language keys and prompts, our review model is believed to be the same.

The Spectrum 128 uses the same case as the Spectrum Plus computer. However, the "128K" logo in the lower right, the RS-232 and RGB ports on the side and back, and the separate numeric/cursor keypad marks it as being a different machine. The feel of the keyboard is also better than the Plus and comes much nearer to that of the QL. The RGB port allows direct connection to RGB and composite video monitors which the Spectrum Plus did not provide. The RS-232 port can be used for modems or the Spectrum QL or other serial printer (with proper cable).

The two most interesting features of the 128 is its extra memory and the keypad which plugs into the front of the keyboard and offers both cursor and numeric entry. When in 128K mode, the keypad provides a full screen editor, in effect a simple built-in word processor. The CMND key puts the pad in editing mode. The various cursor marked keys allow moving left or right one character, up or down one line, one

page, or to the beginning or end of your document. Apparently the DELETE command can be used in connection with some of the cursor keys for block deletion functions.

Other editing functions available include setting the left margin, word wrap, and insert on/off. These editing functions can be used in both text files and in program listings making programming much easier. Software houses should be able to write much more powerful word processing programs using the built-in editing features of the 128, since most of the basic functions do not have to be programmed in.

When the computer is first turned on, it is in 128K mode. In this mode, access to the added 64K is possible as if it were a type of 64K disk drive. Files and programs can be saved to and loaded from it in just a second or two. While in 128K, BASIC keywords have to be typed in, that is, instead of pressing the "J" key for LOAD, the actual letters L, O, A, and D must be pressed in capitals. Two 128K games included with the computer show some of the power of the "RAM disk". "Daley Thompson's Super Test" takes 12 minutes, 45 seconds to load from cassette! As different parts of the game are played the computer calls for those sections from the 64K bank and moves on to them without any noticeable lag in the screen. It is very impressive! In addition, that extra memory allows for very detailed and graphically stunning programs which require a lot of memory.

The Spectrum 128 has basically the same sound capabilities as the Timex 2068, but has no built-in speaker, using instead the TV or separate audio amplifier. A MIDI (Musical Instrument Digital Interface) allows connection of various electronic synthesizers, musical keyboards, etc. for advanced music applications.

The Spectrum 128 comes on in 128K mode but can be switched to a regular Spectrum Plus (48K) by typing "SPECTRUM" and pressing the ENTER key then typing NEW and ENTER. This fully emulates the Spectrum Plus. However, this mode can be exited only by turning off the machine or by use of the RESET button.

It is the preliminary opinion of the SUM staff that the Spectrum 128 is a truly



outstanding machine which, along with the QL, should keep Sinclair strong in the English market. Pricing at less than \$300 should make it very competitive with the Commodore 128, and the large software base make it an attractive purchase. The added memory, keypad, and built-in editor will appeal to software developers as more powerful business applications can developed without having to learn a new operating system. There may be some shifting of the price downward to prevent

its competition with the QL. There is no indication that Sinclair will officially bring the computer to the American market, but English Micro Connection and perhaps other U.S. dealers of T/S products will probably import English machines.

SUM's evaluation machine was obtained from the English Micro Connection. Bob Dyl indicates that he can supply Spanish machines now to anyone interested. He has the 128 manual translated into English.

-- Richard Cravy

## Magnavox RGB Monitor Inexpensive Color

Any Spectrum or TS-2068 owner who has seen their model of computer running on an RGB monitor is never really happy with a color TV or composite color or green monitor again. Both computers require an adapter be purchased for such a hook-up, but the real problem is the cost of purchasing the RGB monitor.

While most monitors (and televisions) are prepared to receive their screen info from the computer on a single line which must then be "decoded" by the monitor to pull out red, green, blue colors, etc., the RGB monitor is different. Its signals are already separated before coming into the monitor. The monitor is designed to take these separated out color signals and show them on the screen to greatest advantage. Typically, a composite screen has trouble displaying clear sharp edges to lines and text characters are often fuzzy or have a ghostly duplicate. Borders where two colors meet have a "crawling" effect. All who use them know the effects well. (This is a layman's description.)

However, RGB monitors are generally more expensive and more limited as to the computers that can use them. While a monochrome 12" monitor can be obtained for under \$100 and a color TV for less than \$200 (and can be used with almost all home computers), RGB monitors typically start at \$325 and may require an adaptor (\$50) and custom cable (\$15+) before it can be used. A popular RGB monitor for T/S users is the Sears model which lists in their catalogs for \$339 + shipping. Different

than most, it has television, composite color, and green screen monitor settings, in addition to the RGB ability. This makes it a best buy for many computerists.

Now there is another choice available. Magnavox, also known as NAP, has introduced the RGB Monitor 40, a 13" monitor with a horizontal resolution of about 390 pixels, more than enough for the 2068 or Spectrum which produce 256 pixels across the screen. In addition, the QL does quite well with it if in 64 column mode and is very readable even in its 80 column mode. Both QL and Spectrum graphics are beautiful. The QL generates 512 pixels across.

The Magnavox RGB monitor comes well equipped. Three input modes are available as standard equipment: digital RGB (most computers including T/S), analog RGB (some Apple computers), and composite color. In addition, a green screen switch for monochrome display and an audio input and volume control can be used. Where many monitors only offer controls for brightness, contrast, color, tint, and vertical hold, the Magnavox also allows adjusting sharpness, horizontal hold, vertical and horizontal height and width (very important for QL), and two switches to allow optimum viewing when used with a VCR or camera. Finally, a small built-in tilt stand can be used to angle the screen for more convenient viewing.

For all of these features, I was able to purchase the Magnavox RGB 40 on sale at Service Merchandise for \$199!

-- Richard Cravy



# Header-Reader for 2068

Loading a program into the 2068 is always divided into two parts, The Header and then the program or bytes or array.

R-HEADER reads the header without loading the program. The header contains the following information:

1. Program Type (BASIC, code, array)
2. NAME
3. Length with and without variables
4. Auto-Run line (BASIC)
5. Byte Origin (Code)

Type in the listing and save it before RUNNING. Then RUN, Follow instructions. The program will list contents of any headers it encounters from tape.

Real Gagnon  
Quebec

## Listing 1 : R-HEADER program

```

1 REM _____R-HEADER 2068 by GAGNON-o85_____
2  CLEAR 31999
5  BORDER 0: PAPER 0: BRIGHT 1: INK 5: CLS
10 GO SUB 1000
50 CLS : GO SUB 600: BEEP .01,10: PRINT  AT 10,9: INK 0: PAPER 6: FLASH 1:"STA
RT CASSETTE"
60 RANDOMIZE  USR 32000
65 BEEP .01,45
69 CLS : GO SUB 600
70 LET ix=32256
80 LET type= PEEK ix
90 PRINT  INVERSE 1'("Program:" AND type=0)+("Numeric Array:" AND type=1)+("St
ring Array:" AND type=2)+("Bytes Block:" AND type=3);
100 PRINT  INVERSE 0;" ";; FOR n=ix+1 TO ix+10: PRINT  CHR$  PEEK n;; NEXT n
110 PRINT  INVERSE 1'"+("Prog. + Variable " AND type=0)+("Code " AND type); " Le
ngth:";
120 PRINT  INVERSE 0;" ";; PEEK (ix+11)+256* PEEK (ix+12)
130 IF type=1 OR type=2 THEN PRINT  INVERSE 1'"Variable:";; PRINT  INVERSE 0;"
"; CHR$ ( PEEK (ix+14)-32-64*( PEEK (ix+14)>192))+("$" AND type=2): GO TO 175
140 PRINT '': PRINT  INVERSE 1;("Auto-Run Line:" AND type=0)+("Block Origin:" AN
D type=3);
150 PRINT  INVERSE 0;" ";; PEEK (ix+13)+256* PEEK (ix+14)
155 IF type=3 THEN GO TO 175
160 PRINT  INVERSE 1'("Program Length:" AND type=0);
170 PRINT  INVERSE 0;" ";; PEEK (ix+15)+256* PEEK (ix+16)
175 PRINT '"" OVER 1;"....."
180 PRINT '"" OVER 1;" S: STOP          ENTER: CONTINUE ": PAUSE 0: IF INKEY$ ="s
" OR INKEY$ ="S" THEN STOP
190 RUN
600 PLOT 0,0: DRAW 255,0: DRAW 0,175: DRAW -255,0: DRAW 0,-175: PRINT  INVERSE
1; AT 0,9;"R-HEADER 2068"; AT 1,9;" GAGNON-o 85 ""
610 RETURN
1000 REM _____the M.C.
1010 DATA 221,33,0,126,175,17,17,0,55,1,254,254,205,153,100,205,252,0,186,32,240
,219,255,203,191,211,255,175,211,244,201
1020 FOR I=32000 TO 32030: READ A: POKE I,A: NEXT I
1030 RETURN
9991 SAVE "lect2068" LINE 1: VERIFY "lect2068"

```



# Basic Graphics on the 2068

When writing my first article for SUM, I made an assumption that there were many others like myself that did not know much about the graphic abilities of the 2068.

In reviewing the article, I think that it was a good assumption, but assumptions can be dangerous. Many times I have read an article in which the author assumed that the person reading would know or understand a given item. The end results could be a failure to understand what the author was trying to get across. This particularly is true in technical manuals.

A word to those who may be longing to be able to write a program that you have on your mind. DON'T BE DISCOURAGED! If you have the desire to learn and want to bad enough, hang in there, it will come with patience, and perhaps with some help.

There are several things that I intend to cover here. They include forming your program, reasoning it out, the use of PLOT, DRAW, PRINT AT, ON ERROR, POINT, PAUSE, and FOR-NEXT loops.

The first thing that you should do when writing a program is to have a direction in mind, that is, "what do I want to accomplish?", "How do I do this?". Make some notes to yourself such as:

## Notes:

1. Draw squares, form them into a three sided box.
2. Label the sides a, b, etc.
3. Give the dimensions.

## Purpose:

Show how to create box shapes. How to place labels. Show the approach to the problem. Show how to start PLOT & DRAW.

Obviously there are some things that have to be learned here before the program can be written such as how to use the commands which tell the computer what we want it to do. Before we use the DRAW command we must learn how to use the PLOT command.

Begin by getting your 2068 manual out and turning to page 152. There you will find a chart which gives the grid coordinates for the screen. Now notice

that at the lower left hand corner you will see a 0. This is the starting point for the X coordinate (or axis). At the lower right hand corner is the starting point for the Y coordinate. If you read my first article on the 2068 graphics, you will remember the phrase "Why (Y) up and down when (X) across". This is where it came from. The Y axis is the up and down axis and X axis is left to right.

10 PLOT 50,50 tells the computer to move from the lower right corner 50 pixels to the RIGHT and the second number 50 tells the computer to move UP 50 pixels toward the top. The point is then put at the intersection of these two coordinates. You may use any two points within the bounds set by the graph. Try entering a few points of your own.

You may have discovered that you can string these PLOT commands together, that is ; PLOT 50,50: PLOT 100,75 etc. Now try this:

```
10 PLOT 0,100
20 DRAW 40,0
30 FOR N=0 TO 10
35 DRAW N,N
40 DRAW N,0
50 NEXT N
```

In line 10 we have the PLOT command that tells the computer to stay at 0 on the X axis and move to 100 on the Y axis. This specifies the starting point for the DRAW command. When we tell the computer to DRAW 40,0 we are telling it to start at PLOT point 0,100 and move to the right 40 pixels without moving up or down. All PLOT and DRAW commands must have a comma between numbers.

Line 30 sets up what is called a FOR-NEXT loop. What it does is to set N at a value of 0 and increments N each time a NEXT N is encountered and passes again through the loop untill N reaches its final value of 10 in this case. Line 35 causes the computer to DRAW a diagonal line as N is incremented with each pass.

Line 40 draws to the right the count of N pixels. This line will continue to be drawn until the full count of 10 has been reached.



These FOR-NEXT loops are useful in many applications in BASIC. Anytime you may want to advance a number value or repeat a PRINT statement, you may use a FOR-NEXT loop. Of course there are rules here also. See Your manual.

We have shown you two ways to DRAW a line. Notice that the FOR-NEXT loop is the slowest of the two and that DRAW is almost instantaneous. Now lets review using the computer:

```

10 CLS: PRINT "A REVIEW OF PLO
T AND DRAW"
20 INPUT "ENTER TWO PLOT NUMBE
RS (0-255),(0-175) ";P1,P2
30 INPUT "ENTER TWO DRAW NUMBE
RS ";D1,D2
40 ON ERROR GOTO 100
50 PLOT P1,P2:DRAW D1,D2
60 PRINT "PRESS ANY KEY TO CON
TINUE": PAUSE 0
80 GOTO 20
100 PRINT "YOUR DRAW NUMBER IS
TOO LARGE. REDUCE ITS VALUE"
110 PRINT "PRESS ANY KEY TO CON
TINUE": PAUSE 0: GOTO 20

```

#### More about FOR-Next loops

We stated that the loop would count from 0 to the stated high number. But the computer sees the zero as another number. Try this:

```

10 FOR N=0 TO 5
20 PRINT N
30 NEXT N

```

After running, you should have the following printed down the screen: 0,1,2,3,4,5. That's six numbers, not five! If you want a count of five, use: 10 FOR N=1 TO 5 in the above example.

This would return a count of five for N. It is important to remember this when setting up a program in which you will want to be doing a loop. One occasion where you may want to start at zero instead of one is when you wish to PRINT AT a given location on the screen that starts at a zero position. For example:

```

10 FOR N=0 TO 5
20 PRINT AT N,0;"POSITION ZERO
"
30 PRINT AT 5,N;"POSITION ZERO
AT LINE 5"
40 PAUSE 100
50 NEXT N

```

Run the program and study it to understand what the FOR-NEXT has done. The first time through the program the position which contained an N was set to zero. The next time through they were incremented by one and so on until N reaches five. The PAUSE 100 is there to slow the action down so that you may observe the changing locations. PAUSE 100 tells the computer to stop for 100/60 seconds.

Another command that needs to be discussed is the PRINT AT command. This command works in the same manner as the PLOT command except that it has a different set of numbers associated with it. Again referring to the manual page 152. Notice that there are numbers which run from the upper left to the right on the grid, and from the upper left down. These are PRINT AT locations of the screen. To use them, simply decide where on the screen you want the printed material to appear and then insert these numbers into the PRINT AT command.

For example, let's assume that you may want a title to appear at the top of the page and begin text two lines below the title. You would first look at the graph in the manual and pick the locations for the printed matter. Lets try line 0, 10 spaces over, and text is to start on line 2, 5 spaces over. On the computer it would be:

```

10 REM ** PRINT AT locations **
20 PRINT AT 0,10;"TITLE HERE";
AT 2,5;"START SECOND LINE HERE"

```

You may start your line at any line number you wish as long as it is in the bounds of the grid numbers from page 152. However, you also may have to count the spaces available for that line. If you are trying to put words on one line which will take more than 32 spaces they will be sent to the next line and start at position 0 of that line unless you have told the computer to do something else. Remember the FOR-NEXT loop? Well we could use it here for example to space lines or words. Try this:

```

10 REM ** SPACING LINES **
20 FOR N=1 TO 6 STEP 2
30 PRINT AT N,5;"LINE SPACING
BY TWO'S"
40 NEXT N

```



We have another new command, STEP 2. This command simply tells the computer to count by two's instead of by one's. If we had a special case where we wanted to count down from a high number to 0 we could use STEP -2.

OK, if you have stuck with us you are now going to set up the program for drawing a three-sided box. The first thing we have to do is to decide how big we want to make the box and where on the screen we want to put it. We also have to consider the room that the labels will take up on the screen. The best way to do this is to have some graph paper that can represent the graph in the manual.

I should mention one other thing before we start our drawing. Each character is made up of a square of 8 x 8 pixels each on the grid. When the computer sees a PRINT AT command, it sets aside an 8 x 8 square for each letter. This has an effect on our PLOT commands in that it will let you print only in each 8 x 8 grid. This means that you must plan your PRINT statements in relation to your graphics. I will not attempt to go into this further here for it is a subject in itself.

Looking at the graph paper (or the graph in the manual) we will first choose the PRINT AT area for the title. WE will use line 0 so that we have as much of the screen as possible available for future use. You can change them later if you choose. Now remember that we want to label the dimensions of the box, so we will set aside line 18 and columns 5-12 and set aside lines 10-16 and columns 11 & 12 for the side dimensions.

Now we will pick a PLOT location that will put us somewhere near the center of these PRINT AT locations. Looking at your graph you will see that line 10 and column 11 or 12 is a good choice for the focal point of the top right corner of the box. So we will use that as our starting point for the first PLOT. Now try this:

```
200 REM ** DRAW BORDER **
210 PLOT 0,0: DRAW 0,175: DRAW
255,0: DRAW 0,-175: DRAW -255,0
220 REM ** BOX-TITLES-LABELS-
DATA COMPLETE
230 PLOT 75,95: DRAW 10,0: DRAW
10,20: DRAW 0,5
240 PRINT AT 18,5;"W= 10"; AT 1
9,5;"H= 5"; AT 20,5;"L= 5"
250 REM ** DRAWING COMPLETED **
```

Now that you have had a chance to play with the first part of the program, let's go a little farther and learn how to make an auto-DRAW program which will display any size box within the grid areas of the screen.

**WARNING! MAKE SURE YOU SAVE THIS PROGRAM BEFORE RUNNING IT!!**

```
300 REM ** AUTO-DRAW OF BOXES *
310 REM GET DATA
320 INPUT "GIVE THREE DIMENSION
S (H,W,L) ";H,W,L
330 PLOT 75,95: DRAW 0,-H: DRAW
-W,0: DRAW 0,H
340 DRAW W,L: DRAW W,0: DRAW -W
,-L: DRAW -W,0
350 DRAW 0,-H: DRAW W,0: DRAW L
,0: DRAW 0,H
360 PRINT AT 18,5;"W= ";W; AT 19
,5;"H= ";H; AT 20,5;"L= ";L
370 REM ** DRAW AND FILL BORDER
380 PLOT 0,0
390 DRAW 5,5: DRAW -5,5
400 ON ERROR GOTO 420
410 GOTO 390
420 PLOT 0,175
430 DRAW 5,-5: DRAW 5,5
440 ON ERROR GOTO 460
450 GOTO 430
460 PLOT 255,175
470 DRAW -5,-5: DRAW 5,-5
480 ON ERROR GOTO 500
490 GOTO 470
500 PLOT 250,0
510 DRAW -5,5: DRAW -5,-5
520 ON ERROR GOTO 540
530 GOTO 510
540 PRINT AT 1,10;"AUTO-DRAW"
550 ON ERROR RESET
560 STOP
```

#### PROGRAM 2

Now run Program 2 above and watch what happens after you enter the data. If the program locked up, check your typing and run it again. There are some unusual things in this program which you don't see very often. We will explain these and leave the others for you to think over.

Note the ON ERROR statements. If the computer detects an error, the program will do as commanded in the last ON ERROR statement encountered. You must be very careful how you use them else you may find your computer "locked up" and turning it off as the only way to get out of it.



Lines 310-360 takes the data for the dimensions and DRAWS the inner and outer border lines. Then starting at line 370, we see the first PLOT followed by a DRAW. It is at this point that we must carefully observe whats going on.

The computer PLOTS its starting point, then it starts to DRAW. But notice that the DRAW is stuck in a loop formed by line 410. Now there are only 175 pixels available going up the grid. When the 175th point is reached, there will be an error generated as the computer tries to PLOT beyond this point. Hence, it goes to line 420 and starts again from there with the commands given in that line. It "drops through" the program until it comes to the end, thus being completed.

At line 550 we see ON ERROR RESET. This tells the computer to clear itself from the previous error commands. Change line 400 to ON ERROR CONTINUE. RUN the program. Now you can see just what happens when the computer "locks up".

Now lets add a new command, POINT, which checks any point of the screen to see if it is "colored" or "filled". If it is, a value of one is returned, if it is not, 0 is returned. Lets use this new command to fill in the box.

To activate this command, we tell the computer where on the screen we want to check for this condition. We know from our PLOT and DRAW statements where this is, but we will start before that point so that you may see better how this command works. DELETE line 560 then add these lines to Program 2:

```
570 REM ** add color fill **
580 LET C=4: REM >>COLOR<<
590 FOR N=35 TO 100
600 PLOT N,95
610 IF POINT (N+1,100) THEN GOT
O 630
620 NEXT N
630 FOR N=N TO N+47
640 PLOT 48,145-N
650 DRAW INK C;47,0: NEXT N
660 STOP
```

Now look at the program starting at line 590. Here we have set up a FOR-NEXT loop. Line 600 starts to PLOT at position N and continues until the conditions at line 610 are met. Now notice here that N is given a value of N+1. The reason this was done is that if we had told the computer to look at the point of N, it

would have seen a value of 1 and started to ink fill there. We don't want this to happen. We need it to fill when the point in front of the N point is 1.

In line 630 a new FOR-NEXT loop is set up for the fill routine. The computer now starts to fill the front of the box. Notice the loop is set up to the dimensions of the front of the box. Again the value of N is one less than that needed (48 would be on the line used to DRAW the box, we want to stop short of this by one count).

(Ed. Note: One good way to learn programming is to try different approaches. In the color fill program, try making the computer "scan" for the beginning of the box, remember this point, then look for the end of the box (the other side) and use the DRAW command to fill the space. Remember DRAW is faster. --JW)

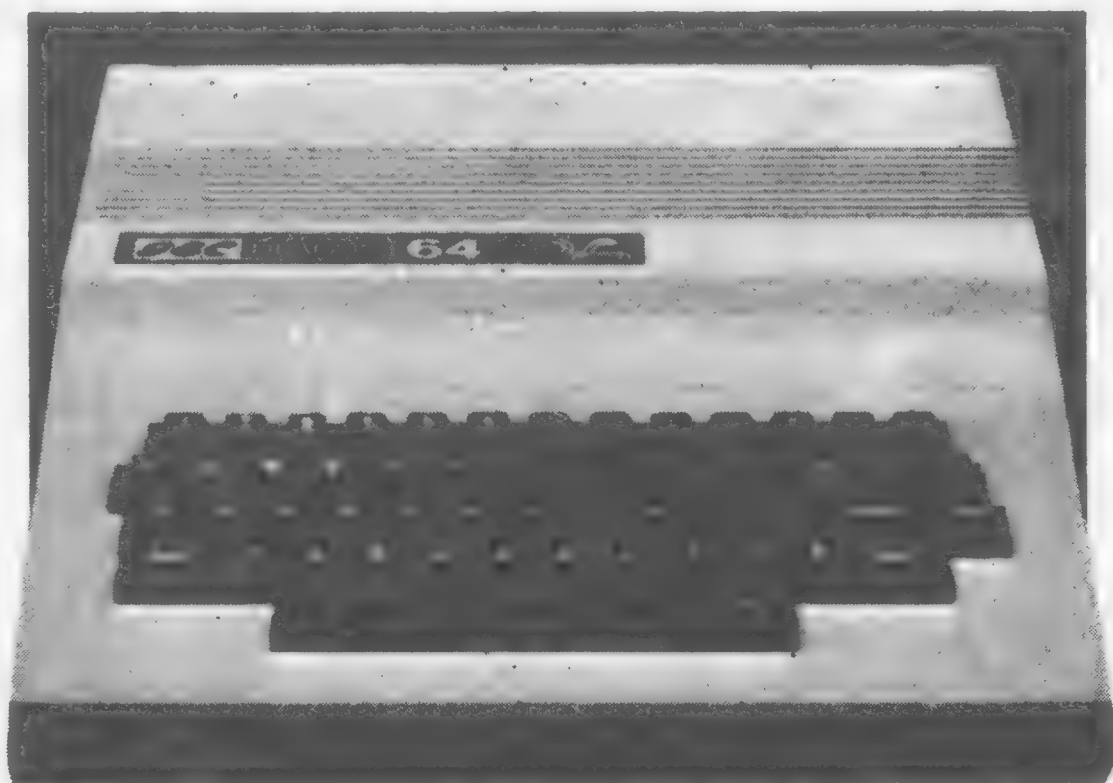
You have been given a lot to digest in this article. You have seen how to use the PRINT AT, PLOT, DRAW, FOR-NEXT, STEP, ON ERROR, POINT, and PAUSE commands. You have also learned about color fill, screen coordinates (X & Y axis), and how to choose your screen layout. True, there is much more, but this is one big step forward in learning how to use your machine.

Let SUM know what you think of such articles as well as others. Remember, you are the ones who make or break a magazine! Lets all do our best to help keep such magazines alive and well. It's the only media that we have available for reaching many people.

I hope that this may help many of you out there get a start. I will reply to any questions that you may have concerning this article, or any other. Please send a SASE. Give full details of your problem and I will do my best to answer them.

Andy Centek  
31770 bock  
Garden City MI 48135





## WORD PROCESSOR

SUM MAGAZINE has a Dragon 64K Computer made in England for sale. It comes with a highly acclaimed and powerful 64 column word processor on a ROM cartridge which is much more powerful than anything available for the Spectrum or TS-2068. (File saving/loading is to cassette.) It has a full-size keyboard; parallel & serial interfaces; TV & monitor output; and joystick ports. It is in near new condition. Other software and peripherals include a data base manager, games and graphics programs, two joysticks, printer cable, 110 volt power supply, cassette cables, and 12 issues of Dragon User Magazine. Software, disk drives, and hardware still available in England. \$225. Richard Cravy, c/o SUM, 3224 NW 30th Avenue, Gainesville, Florida 32605. 904/378-9000.

### Smart Text TS-2068

and the new

### Smart Text OS-64 (For the Zebra OS-64 Cartridge)

With Universal Intfc/Printer Patch  
For all Configurations

Three Integrated softwares that does  
most all administrative functions  
Word proc - Data files mgt - Mailing  
List - Form Letters - Mailing Labels  
Repeat printing - Auto Letter Heads.

Supports all Printers, plus TS-2040.

29.95 + \$3.00 mailing to: Bill Jones  
Gulf Micro, 1317 Stratford Ave,  
Panama City, FL 32404

## SERIOUS PROGRAMMERS

### ● Machine Language Utilities

- +Read/write cassette data files
- +Save/merge/erase BASIC
- +Save/restore variables
- +Overlay BASIC code
- +Copy auto-run tapes
- +Alphabetic sort

### ● Machine Language Book

"Machine Language Programming on the Timex/Sinclair"  
by D. B. Wood

How to use the ROM, pass parameters, read the  
keyboard, do animation, etc.

### ● Word Processing

- +Full-feature editing
- +Save, load and append text
- +4K machine code; use up to 64K RAM
- +Versions available for normal or Qsave  
cassette; AERCO or COMPUSA disk
- +Versions with T2040 upper/lower case  
printer driver or with tailored driver  
for other interfaces/printers

### ● COMPUSA Disk Utilities

- +Read/write to/from any memory address
- +Read/write multiple track data files
- +Read fractional tracks
- +Automatic disk-to-disk copy
- +Recover deleted tracks
- +List directory with physical tracks

==Quality products for the T/S 1000/1500 or ZX81==

Write for details - Dept SUM

  
**SiriusWare**

6 Turning Mill Road  
Lexington, MA 02173



## Zebra Floppy Disk System

**PRICE & BONUS PACKAGE** - The price on our one-drive Floppy Disk System is \$350.00. This price includes our software **BONUS PRODUCTIVITY PACKAGE#1** consisting of specially enhanced disk version of Tech-Draw Junior, MSCRIPT 64-Column Word Processor, ZMAIL Mailing List Software, and more. Add-on drives are available for \$125 each.

**HARDWARE COMPATIBILITY** - All Zebra FDD Systems are being shipped with the Zebra Expansion Interface which allows you to use your TS2040, AERCO, TASMAN, 2050 modem and just about any other TS2068 bus peripherals with your Zebra FDD system.

**OS-64 COMPATIBILITY** - The Zebra FDD System is fully compatible with our new OS-64 64-column operating system cartridge.

**SPECTRUM SOFTWARE COMPATIBILITY** - We are currently readying for production a simple field installable FDD System Option to allow the Zebra FDD System to run in Spectrum Mode.

**CP/M COMPATIBILITY** - We now have a fully functional CP/M compatible operating system that is 64 columns, BUG-Free, and uses a wise choice of the TS2068 keyboard keys for the CP/M control key functions. As soon as the licensing agreement is signed we will be making this product available to our users. Pricing and availability to be announced in the first quarter of 1986.

## Tech-Draw Junior

Tech-Draw was created for the TS2068 Zebra Graphics Tablet System. Now, to bring you most of the power of Tech-Draw without the expense of the graphics tablet, we have created Tech-Draw Junior.

Tech-Draw Junior is functionally identical to the original Tech-Draw except for that you can now use a joystick instead of the graphics tablet to control Tech-Draw's functions.

Tech-Draw was described in our last two Zebra Catalogs and has received favorable reviews in the following magazines:

**TIME-DESIGNS** Sept/Oct 85 Page 17...

"the Zebra Graphics Tablet and Tech-Draw are excellent"

**TS HORIZONS** May/June 85 Page 21....

"my prediction of the Program of the Year: Tech-Draw"

**SUM MAGAZINE** August 85 Page 1.....

"Tech-Draw is very professional and puts this system in the same league as say the MacPaint series for the Apple"

Tech-Draw Junior supports the following printer interfaces: AERCO, TASMAN B & C, A&J, Zebra FDD Serial, and the following printers:

TS2040, ALPHACOM/32, EPSON FX & RX, GEMINI 10X, STAR MICRONICS SG-10, MEMOTECH DMX-80, PANASONIC 1090/1091, CITH 8510, SEIKOSHA GP250 & GP100, GORILLA BANANA, OLIVETTI PR-2300.

Cat#	Description	Price
C256	Tech-Draw Jr. (TAPE).....	19.95
C257	Tech-Draw Jr.(ZEBRA FDD).....	24.95
C258	Tech-Draw Jr. (A&J Microdrive).....	19.95
C121	ATARI Joystick.....	9.95
C147	SUPER Joystick.....	19.95

## WC2050 MODEMS

### ANCHOR AUTOMATION CLOSEOUTS

#### NEW UNTESTED & UNCASD WC2050 MODEM BOARDS

Anchor Automation sold these fully assembled boards as surplus at an auction. They are untested and are offered on as AS-IS, NO-RETURN basis.

Cat# W251..... \$10 each or 3 for \$25, 10 for \$70

#### 9VDC 700ma POWER SUPPLIES

These are brand new Sinclair ZX81 power supplies and are perfect for your ZX81, TS1000/1500, or for use with the modem boards above. Quantity discounts available.

Cat# PS01..... \$6 each or 2 for \$10, 3 for \$12

### MTERM II TS2068 SMART TERMINAL PROGRAM

Features full Upload/Download Support, 10 number auto-dial directory and 10 Macro-Keys.

Cat# ST02..... 19.95

### COMPLETE GUIDE TO MTERM II by BARRY CARTER

This book tells you all you wanted to know about MTERM II. It details many features of MTERM II that were left out of the the manual.

Cat# C139..... 8.00

### MINI XMOD 1.7 TS1000 XMODEM SOFTWARE

This TS1000/1500 software features XMODEM Error-Free Upload/Download protocol. Provided on tape are versions which support all RAM sizes from 16-64K. Compatible with AERCO and MEMOTECH printer interfaces for 80 Column printing.

Cat# WE01..... 19.95

Send for FREE 48 Page Timex Product Catalog

Please include \$3.00 Shipping with all orders, C.O.D. Orders add \$3.00.

NYS Residents add appropriate Sales Tax. We Accept VISA and MASTERCARD.

## ZEBRA SYSTEMS, INC.

78-06 Jamaica Avenue Woodhaven, NY 11421 (718) 296-2385



# INVENTORY CLEARANCE

Sale ends January 31, 1985

## TIMEX BOOK SALE

We have the largest inventory in the world of quality books for Timex Computers.

**ANY BOOK FROM THIS LIST:**

\$5.00 ea, 2 for \$9.00, 3 for \$12.00

### TS2068 SALE BOOKS

Title	List
INSIDE THE TIMEX/SINCLAIR 2000 COMPUTER.....	11.95
TS2068 BASICS & BEYOND.....	12.95
TS2068 BEGINNERS/INTERMEDIATE GUIDE.....	9.95
TS2068 INTERMEDIATE/ADVANCED GUIDE.....	9.95

### TS1000 SALE BOOKS

INS & OUTS OF THE ZX-81/TS-1000.....	12.95
--------------------------------------	-------

### TS1000 & TS2068 SALE BOOKS

COMPUTER INTERFACING TECHNIQUES IN SCIENCE FOR THE TIMEX/SINCLAIR.....	12.95
POWERFULL PROJECTS FOR THE TIMEX/SINCLAIR...	12.95
LEARNING TIMEX/SINCLAIR BASIC by DAVID LEIN.	12.95
VU-CALC & VU-FILE (THE ORGANIZER).....	12.95

## TIMEX TS2068 SOFTWARE

We purchased leftover inventory from a very large chain of department stores. These are all original Timex Product in full color boxes.

### CARTRIDGES

Cat#	Description	List	Sale
72000	BUDGETER.....	34.95	10.00
73001	STATES & CAPITALS.....	29.95	10.00
74001	ANDROIDS.....	29.95	10.00
74005	CRAZYBUGS.....	29.95	10.00

### CASSETTES

62009	PERSONAL PORTFOLIO MANAGER.....	19.95	5.00
62010	PERSONAL HOME FINANCE.....	19.95	5.00
63001	STATES AND CAPITALS.....	15.95	5.00
63004	TIME TEACHER I * NEW! *	19.95	5.00
63010	SPELLING I.....	19.95	5.00
63011	SPELLING II.....	19.95	5.00
63016	MATH WIZARDRY I.....	15.95	5.00
63017	MATH WIZARDRY II.....	15.95	5.00
63019	WORDCROSS.....	15.95	5.00
63020	WORD PLAY I.....	15.95	5.00
63021	WORD PLAY II.....	15.95	5.00
63025	LANGUAGE USAGE.....	15.95	5.00
64001	ANDROIDS.....	19.95	5.00
64002	PENETRATOR.....	19.95	5.00
64004	CASINO I.....	15.95	5.00
64005	CROSSFIRE.....	19.95	5.00
64006	CIRCUIT BOARD SCRAMBLE * NEW! *	19.95	5.00
64007	DRAGMASTER.....	15.95	5.00
64009	GUARDIAN.....	15.95	5.00
64010	STOCK MARKET SIMULATON.....	19.95	5.00
64012	FUN GOLF.....	15.95	5.00
64013	CHESS.....	19.95	5.00
64014	HUNGRY HORACE.....	19.95	5.00
64015	HORACE GOES SKIING.....	19.95	5.00
64019	HORACE AND THE SPIDERS.....	19.95	5.00
64021	BLIND ALLEY.....	19.95	5.00
64023	CRAZYBUGS.....	19.95	5.00

**SINCLAIR QL COMPUTERS ARE IN STOCK NOW!**

Call for pricing and FREE SINCLAIR QL Catalog.

### TIMEX VOICE SYNTHESIZER SALE!

We have too many expensive Votrax Voice Synthesizer IC's in stock so we are running a 50% off sale on our speech synthesizers which come complete with Text-To-Speech software.

C141 Zebra-Talker for TS1000.....	35.00
C241 Zebra-Talker for TS2068.....	35.00
C145 Optional Speaker/Amplifier.....	12.50
Votrax SC-01 Voice IC (for experimenters who want to do their own thing).....	15.00

**SPECTRUM REV 3 ROM CHIPS - \$10 each, 2 for \$15.00**

### TS-1510 CARTRIDGE PLAYER AND CARTRIDGES

Plays Command Cartridges on ZX-81, TS1000 or TS1500. Includes RESET button. Provides instant load. Includes 3 Cartridges: CHESS, FLIGHT SIMULATOR, and SUPER MATH. Retail price for set was \$79.80. LIMITED QUANTITIES..... 39.95

**ZX-ASSEMBLER for TS1000/1500..... 5.00**

### MEMOTECH TS1000 ADD-ON FULL-SIZED KEYBOARDS

These have a cable with an interface module that simply plugs between the back of your computer and your 16K RAM. The keyboard sits in front of your computer and does not require you to open your computer for installation.

Cat# C182..... \$49.95

### MEMOTECH CENTRONICS PRINTER INTERFACE

Attach any Centronics compatible printer to your TS-1000 or TS-1500. Supports LLIST and LPRINT.

Cat # C183..... \$59.95

### INNOVATION TS1000 KEYBOARD OVERLAYS

Originally 19.95 our price only..... 3.00

### TIMEX TS1016 16K RAM PACKS

Only 300 left at the special price of..... 10.00

### ALPHACOM-32 OR TIMEX TS2040 PRINTER

Several hundred left at the special price.. 35.00  
Three Rolls of Thermal Paper..... 5.00

### ZX81 / TS1000 SPARE PARTS

NEW TS1000 membrane keyboards ..... 5.95  
USED TS1000/ZX81 TESTED ULA CHIPS..... 5.95

ZEBRA SYSTEMS INC. 78-06 Jamaica Ave. Woodhaven, NY 11421 (718) 296-2385





AT LAST!! A VERY AFFORDABLE COMPUTER  
AT A VERY AFFORDABLE PRICE

POWERFUL FULLY PROGRAMMABLE WITH 2K OF MEMORY—PORTABLE—8-7/8" x 1-3/8" INCH MODULE SINGLE-KEY ENTRY COMMANDS—DURABLE 40 KEY MEMBRANE TYPE KEYBOARD—Z80A BASED FOUR CHIP DESIGN—EDUCATIONAL—UNIQUE SYNTAX-CHECK REPORT CODES FOR ERROR IDENTITY—GRAPH DRAWING AND ANIMATED DISPLAY—ACCURATE TO 9-1/2 DECIMAL PLACES FOR FULL RANGE MATH AND SCIENTIFIC FUNCTIONS—AT AN AFFORDABLE PRICE.

WE CANNOT TELL YOU THE MAKE OF THE COMPUTER BUT IT WAS MADE BY A FAMOUS WATCH COMPANY. THEY USED TO SELL FOR \$99.95.

WE BOUGHT OUT WHAT THE FACTORY HAD LEFT IN STOCK AND HAD TO REMOVE THE LABELS. THESE UNITS ARE UNPACKAGED. LESS THE 9V WALL ADAPTER AND MANUAL. BECAUSE THIS IS A DISCONTINUED ITEM THERE IS NO WARRANTY.

GET THEM WHILE THEY LAST

LIMITED SUPPLY

BUY 1st UNIT FOR \$19.95 BUY 2nd FOR \$16.95 9V DC WALL ADAPTOR \$4.95  
BUY THE 3rd UNIT (NON OPERATING FOR PARTS) \$10.95 MANUAL (OVER 150 PAGES) \$2.95

See September 1984 issue of 73 for TIMEX/RTTY article

#### CHIP BONANZA (AT THESE PRICES THEY ARE A STEAL)

2708	.....	\$1.00 EA OR 10 FOR \$ 9.00
2716	.....	\$2.25 EA OR 10 FOR \$20.00
2732	.....	\$3.25 EA OR 10 FOR \$30.00
2764	.....	\$4.00 EA OR 10 FOR \$35.00
27138	.....	\$7.00 EA OR 10 FOR \$60.00
6902	.....	\$4.95 EA OR 10 FOR \$45.00
6810	(REG. \$3.95)	\$1.95 EA OR 10 FOR \$18.00
68A09	(REG. \$19.95)	\$5.95 EA OR 10 FOR \$50.00
68A21	(REG. \$9.95)	\$2.95 EA OR 10 FOR \$25.00
4116	(or equivalent)	\$ 8 FOR \$ 5.99
4134	.....	\$ 8 FOR \$12.95
XR-2211	(SPECIAL)	\$ 2.95
TMS 9800NL MICRO-P 64 PIN 8 BIT D/B + 16 BIT CPU	.....	\$ 4.95
TMS 9801NL MICRO-P PSI	.....	\$ 2.95
TIM 9804ANL MICRO-P CLOCK GEN. AND DRIVER	.....	\$ 5.95
TMS 9818ANL MICRO-P COLOR GRAPHICS AND DISPLAY	.....	\$ 9.95
KEYBOARD (88/4) 40 KEYS MEASURE 4 x 10 (H-TXQ)	.....	\$ 9.95

APPLE II and APPLE II+ COMPUTER MAINFRAMES fully populated \$150.  
Power supply, case and keyboard, separately available. Call or Write  
Unit as described above, fully assembled & tested \$350 plus shipping  
APPLE POWER SUPPLIES \$29.95

#### Cassette Software:

I have cassette software..... send for list (reg. \$9.95-\$14.95)  
Hal's Special Price: 1 for \$3.95;  
3 for \$10.95; 6 for \$19.50  
10 for \$29.50; 20 for \$50.00  
.....or let Hal select 25 different cassettes (my choice) at 25 for \$50.00!!!

#### HAL'S COMPUTER GOODIES

Timex printer..... (reg. \$99.95) now \$59.95  
Coleco cassette player (battery op.)..... \$29.95  
9V. @ 850 Ma. adapter (needed for 16K RAM packs)..... \$7.95  
16K RAM pack module, new..... \$29.95  
16K RAM pack module, refurbished..... \$19.95  
RCA TV interface cable..... \$1.25  
Dual jack cassette interface..... \$2.50  
TV/Computer game switch..... \$3.95

SHIPPING INFORMATION: ORDERS OVER \$25 WILL BE SHIPPED POST-PAID EXCEPT ON ITEMS WHERE ADDITIONAL CHARGES ARE REQUESTED ON ORDERS LESS THAN \$25. PLEASE INCLUDE ADDITIONAL \$2.50 FOR HANDLING AND MAILING CHARGES. MICHIGAN RESIDENTS ADD 4% SALES TAX. SEND 20¢ STAMP OR SASE FOR FREE FLYER. CANADIAN ORDERS ADD \$5.00 POSTAGE IN U.S. FUNDS.

**HAL-TRONIX, INC.**  
P.O. BOX 1101 - DEPT. HR  
SOUTHGATE, MICH. 48195  
PHONE (313) 285-1782



"HAL" HAROLD C. NOWLAND  
W82XH

**LARKEN**

## DISK DRIVE

CONTROLLER BOARD FOR TS 2068

SPECTRUM EMULATOR COMPATIBLE

- High speed : loads 32k bytes in 7.5 seconds
- commands are : LOAD SAVE DIRECTORY DELETE FORMAT COPY MOVE and BADBLOCKS
- Uses IBM PC compatible 5 1/4" double sided disk drives (SHUGART SA455 or compatible)
- Disk capacity : 160 k bytes
- Dos is on a bank switched 2K eeprom
- Only 1 USR call is required
- Assembled and tested ,all cables and connectors supplied
- Single drive version is available now but a second drive can be easily added (this mod will be available before FEB 86)
- 60 day money back guarantee
- Made in CANADA , many already in use

Price :

\$95.00(US) + \$6.00 shipping

From : LARKEN ELECTRONICS  
RR#2 NAYAN ONTARIO  
CANADA K4B-1H9

### \* Micro-Paint \*

- ^ Super New graphics program!
  - ^ 17 brushes, and Spray Paint!
  - ^ Draw freely, even lines, rays, disks, and CIRCLES!
  - ^ A MUST for serious drawing on the 2068!
- ONLY... \$ 19.95+\$3 s+h

### ROMSWITCH SPECIAL!! <

Turns 2068 into a Spectrum at flick of a switch! Easy to install, hundreds of Spectrum titles available! Don't miss out...get your ROMSWITCH before Jan. 30 for only...  
\$39.95 +\$5 s+h

### \*A&J Microdrive- \$139!\*

- \* No more cassette hassle!
- \* Load 28K in 24 seconds! (11.4K baud)
- \* Uses little wafer-tapes!
- \* Comes complete with drive, interface, cable, built in Parallel intfrfce, 5 wafers, manual...only \$139!!+\$6.50 s+h

Extra 49K wafers- \$ 3.50  
Centronics cable-\$21.99+\$3 s+h  
+++++  
SEND ORDERS + chck, Money order and shipping charges to:

Variety Sales  
175-s1 Osborn Avenue  
New Haven, CT 06511-2852

**QL SUPER SALE- CALL FOR LOWEST PRICE!!**  
**Call or write for FREE catalog-203-387-8512 JOE!**



# CLASSIFIED

**ORIGINAL SOFTWARE** for TS2068, 1000, & 1500. **MONEY MANAGER, FILE MANAGER, FAMILY TREE,** and many others for personal or business use. **SASE** for list. Alan Pattison, 3422 French Loop NW, Olympia, WA 98502.

**2068 PRO/FILE OWNERS:** The first two issues of **EXTENSIONS** total over a dozen improvements and corrections including data save and automatic file updating. \$6 each. Robert Fischer, 221 Scoggins Street, Summerville, GA 30747.

## DRAGON COMPUTER

SUM MAGAZINE has a Dragon 64K Computer (Radio Shack Color Computer clone) made in England for sale. It has a full-size keyboard; parallel & serial interfaces; TV & monitor output; and joystick ports. It is in near new condition. It comes with a highly acclaimed and powerful 64 column word processor on a ROM cartridge. Other software and peripherals include a data base manager, games and graphics programs, two joysticks, printer cable, 110 volt power supply, cassette cables, and 12 issues of Dragon User Magazine. Software, disk drives, and hardware still available in England. \$225. Richard Cravy, c/o SUM, 3224 NW 30 Avenue, Gainesville, FL 32605. 904/378-9000.

```
*****
*                               SUMWARE                               *
*                               P.O. BOX 13, ELLENTON FL. 33532         *
*                               PHONE ORDERS CALL N.Y. (716 547 2273)  *
*                               10 AM TO 6 PM                          *
*                               -----                               *
*                               $$$$ PRE-CHRISTMAS SALE $$$           *
*                               -----                               *
*                               HARDWARE                             *
* * 2040 PRINTERS - $39.95      *TS 1500 COMPUTER - $49.95          *
* * TS 2050 MODEM - $89.95      *TS 1510 'T'DOCK - $10.95           *
* * 2068 CARTRIDGES.....      * 1500 CARTRIDGES.....             *
*   PINBALL ..$11.00           *   MATH .. $6.00                  *
*   CASINO ...$11.00           *   FLIGHT..$6.00                  *
*   ALL OTHERS $9.95           * * 'CHICKLET KEYBOARD FOR 1000   *
*                               * ..... $9.95                      *
*                               -----                               *
*                               DUAL DISC DRIVE SPECIAL              *
*                               DEC DUAL 5.25" DISC DRIVE WITH CASE  *
*                               POWER SUPPLY AND FAN                  *
*                               ONLY ONE (1) LEFT ! CONTROLLER AND I.F. *
*                               NOT INCLUDED                           *
*                               $199.95                               *
*                               -----                               *
*                               SOFTWARE SOFTWARE SOFTWARE SOFTWARE  *
*                               SOFTWARE SOFTWARE                   *
*                               -----                               *
* * SPECTRUM SOFTWARE .....                                         *
*                               *                                     *
*                               DRAGONSbane, TIMEGATE, BUGABOO, FRED,  *
*                               GRID RUNNER                             *
*                               TRAXX, SNOWMAN, ZOMBIE ZOMBIE, STRONTIUM *
*                               DOG.                                     *
*                               ALL ABOVE .....$5.95 EACH           *
*                               SHERLOCK or DOOMDARK'S REVENGE .....$9.95 *
*                               DOOMDARK MAP ..$2.00 (WITH CASS.)      *
*                               TRADER TRILOGY .....$8.95            *
*                               *****                             *
* * 2068 SOFTWARE .....                                             *
*                               *                                     *
*                               TEXT WRITER 2000- $14.95 * TW+64 FOR A&J *
*                               MICRO DR. $19.95                      *
*                               MULTI DRAW ....FIGHTER PILOT.....$9.95 *
*                               EACH                                    *
*                               *                                     *
*                               2068 AND 2040 POWER SUPPLIES ....9.95 *
*                               *****                             *
*                               *                                     *
*                               1000 SOFTWARE                         *
*                               -----                               *
*                               UU-FILE, UU-CALC, TOOL KIT, ZXBUG, HI  *
*                               RES. PACK                               *
*                               MUNCHIES, TRAIL BLAZERS, ZX ASSEMBLER *
*                               ...$5.00 EACH                          *
*                               *                                     *
*                               1000 MULTI-FILE.....$9.95 ALL TIMEX 1000 *
*                               TITLES $2.00 *                         *
*                               *****                             *
*                               ALL ITEMS ARE IN LIMITED SUPPLY. INDICATE *
*                               SECOND CHOICE OR RETURN ON SOFTWARE. SEND *
*                               LSASE FOR CATALOG                       *
*                               SHIPPING: 10% HARDWARE $1.00 PER CASSETTE *
*                               FL. RES. ADD 5% TAX COD ORDERS ADD $3.00 *
*                               *****                             *
*****
```

## ORDER BLANK

☐ I want to subscribe/extend (circle one) my subscription to *SUM Magazine* for one year. Enclosed is:

☐ \$15.00 (U.S. only) ☐ \$18.00 (Canada & Mexico — U.S. funds)

I want to order the following back issues:

- ☐ May '85 — \$2.50  
☐ August '85 — \$2.00  
☐ September '85 — \$2.00  
☐ November '85 — \$2.00  
☐ "Best of SUM" — \$9.95

Please do not order from earlier Order Forms as no other back issues are available.

Make all checks payable to "SUM Magazine". All prices are postage paid.  
SUM MAGAZINE — 3224 NW 30 Avenue — Gainesville, Florida 32605

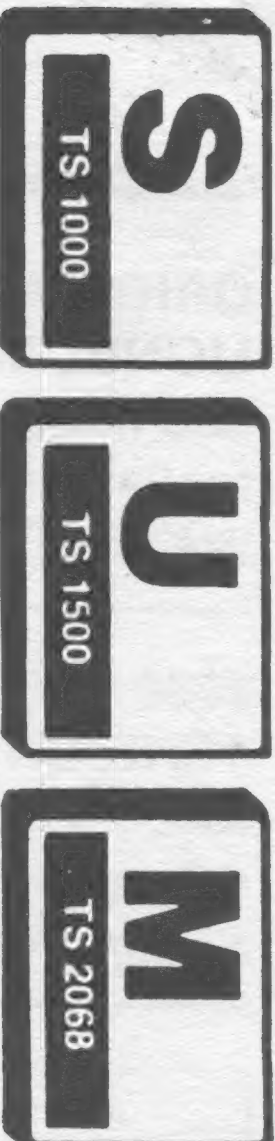
NAME \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Expiration Date on label \_\_\_\_\_





3224 Northwest 30th Avenue  
Gainesville, Florida 32605

PLEASE EXPEDITE DELIVERY

BULK RATE  
U.S. POSTAGE  
PAID  
PERMIT NO. 460  
Gainesville, FL